



NAVIGATING THE DIGITAL ABYSS: EXPLORING THE NEXUS BETWEEN LONELINESS, AGGRESSIVE BEHAVIOR, AND SMARTPHONE ADDICTION AMONG COLLEGE STUDENTS

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Abstract

Smartphone addiction has become a growing concern, potentially linked to negative outcomes in adolescents. This study aimed to analyze the influence of loneliness and aggressive behavior on smartphone habits among teenagers. Employing a quantitative approach, the research utilized a correlational design with a sample of 87 students. The study instruments included validated and reliable scales for measuring loneliness, aggressive behavior, and smartphone addiction. Data analysis involved multiple regression analysis. The results revealed a significant association between both loneliness and aggressive behavior with smartphone use. This suggests that adolescents experiencing loneliness or exhibiting aggressive tendencies might engage in more frequent or problematic smartphone use. Building upon these findings, future research could delve deeper into the potential of digital education and media literacy programs to support healthy smartphone habits and reduce excessive use among adolescents. Additionally, investigating the impact of such programs on the development of guidance and counseling services for university students could be valuable.

Keywords: loneliness, aggressive behavior, smartphone addiction

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Introduction

The rapid advancement of information technology has made human activities more efficient, effective, and accurate. Communication technology is becoming increasingly erratic about daily fluctuations. The emergence of smartphones, also known as mobile phones or cell phones, is the first step of a long and continuous evolution. Smartphones are the most widely used device among the masses, contributing to the current digital revolution and making smartphones the most commonly owned device in society. Many smartphone users have a variety of concerns, such as lifestyle, health, and the need to organize various activities of each user (Firiyani et al., 2021).

Many people in Indonesia own smartphones. According to a Kominfo survey, 66.3% of the country's population owns a smartphone, and 65.34% of women between the ages of 9 and 19 use one (Setiawan & Winarti, 2021). The information provided shows that the smartphone user base increased by about 3.3% from the previous year. The use of smartphones by young people for information purposes and even to take selfies is one of the reasons that led to this increase (Yulianto et al., 2023). There are currently 3.3 billion smartphone users worldwide. In other words, more than three-quarters of humanity has access to the mobile internet (Montag et al., 2021). The percentage of smartphone users in Indonesia increased to 37.1% during 2016 and 2019 (Vandelis, 2019). Currently, 4 billion people have access to the internet worldwide, and that number is expected to increase to 4 billion, 3 billion on social media, and 5 billion through the use of smartphones (Utami, 2019). Based on 2022 projections, the global smartphone user population is expected to reach 3.9 billion (Haq, 2021).

Sometimes smartphones tend to make people's behavior more erratic because they can't control how they use them. This can even lead to problems with time management and social interactions, which can negatively impact one's learning process. Examples of emotional reactions to this situation include frustration and restlessness, which can be exacerbated by stress, anxiety, and nervousness (Nawaldi et al., 2022; Setiawan & Winarti, 2021). Anxiety and depression are two independent positive indicators of smartphone use. A person may experience depression and severe stress, possibly due to the lack of appropriate coping strategies with smartphone use (Matar Boumosleh & Jaalouk, 2017). A study showed that 38.1% of respondents reported decreased sleep quality due to smartphone use, and 35.8% reported experiencing insomnia throughout the night due to using smartphones more frequently, (Matar Boumosleh & Jaalouk, 2017). In addition to these problems, one of the other concerns that arises from the use of smartphones is addiction

Addictions can be divided into two categories: physical and non-physical. Addiction to alcohol or drugs is categorized as physical addiction, but addiction to substances other than alcohol or drugs is classified as non-physical addiction. Smartphone addiction falls under the category of non-physical addiction (Arake & Winarti, 2022; Yandri et al., 2022). Smartphone use is a form of addiction behavior that causes social problems such as self-harm, being less productive, and having poor impulse control over oneself (As-Sahih & Mariyanti, 2020). Three main aspects negatively impact respondents' smartphone use, as evidenced by the mean scores for each question asked. These aspects include daily life experiences, world orientation, and tolerance to questions that have a minimum score of eight points (Jannaty et al., 2023). One of the main indicators in the stationary category is increased activity, positive discrimination, Cyberspace orientation and withdrawal, and appropriate overload with mainly mild tolerance (Barkley & Lepp, 2016).

Several previous studies have shown that one of these researchers is Yang, some students experience smartphone addiction. For example, a study showed that 67 (44.7%) of 150 medical students reported addiction to smartphone use (Kumar VA et al., 2019). Furthermore, among a total of 5,497 medical students, 2,181 were addicted to smartphones (Zhong Y et al., 2022). Furthermore, a study of 1,381 students in Egypt showed that around 59% were smartphone addicts without gender differences (Okasha T et al., 2022). Furthermore, a survey conducted on 181 students in Jeddah Saudi Arabia showed 36.5% of students experienced smartphone addiction (Alhazmi et al., 2018). The study conducted showed that 29.8% of participants reported experiencing smartphone addiction (30.3% of men and 29.3% of women). (Chen et al., 2017). Some of these survey results show that smartphone addiction is a global problem.

Several factors are predicted to influence smartphone addiction, one of which is loneliness (Agusta, 2016). Loneliness is a state in which a person does not feel comforted or desired by himself and is characterized by feelings of resentment and satisfaction. Feelings of loneliness may occur due to a mismatch of expectations with beliefs that occur in an individual's daily life, (Setyowati et al., 2021), Loneliness is also a concept that comes from a reduction in quantity and quality in interpersonal relationships with other individuals or communities. Complex, unpleasant, and emotionally disturbing psychological experiences with loneliness worsen interpersonally and when there is a mismatch between actual and perceived expectations (Karaoglan Yilmaz et al., 2023). During adolescence, there is a positive correlation between smartphone use and loneliness, with both factors increasing in intensity. On the other hand, there is a negative correlation between control and smartphone use, with greater control over oneself being associated with greater intensity resulting in increased levels of smartphone use. (Anggraeni & Meiyuntariningsih, 2021).

Another factor that influences smartphone addiction is aggressive behavior (Muhamad, 2016). Aggressiveness is an expression of emotion in response to anything personal that is applied in the form of verbal or nonverbal abuse aimed at individuals or organizations to harm others (Cahya, 2022). An aggressive person is one who deliberately uses physical force to harm others, verbally, or psychologically. (Hartini et al., 2022). Aggressive refers to behavior that is directed only at others and can take various forms of retaliation. However, aggressive behavior and bullying among students are severe problems that adversely affect students' academic performance and mental well-being (Ferdiansa, 2020). Aggressive behavior is a type of behavior that is carried out secretly against another person to inflict physical and psychological harm on that person (Khaira, 2022). Aggressive behavior occurs in some students. For example, 98 students (18.2%) showed low-level aggressive behavior, 403 students (74.8%) showed moderate-level aggressive behavior, and 38 students (7.1%) showed high-level hostile behavior (Setiawati & Gunado, 2019). In addition, the poll revealed that approximately 46.4% of participants engaged in hostile verbal behavior, 29.6% in physical aggression, 12.8% in behavior directed at women, and 11.2% in behavior directed at men (Budiman et al., 2023).

This study aims to determine how aggressive behavior and loneliness affect smartphone addiction. It is important for researchers to consider analyzing the influence of independent variables on smartphone use to more clearly explain the current state of the research. This analysis would allow researchers to examine the relationship between independent variables (such as advisor monitoring) and smartphone use, and the implications for users' mental and physical health. Although some previous studies have been conducted to analyze the effects of loneliness, aggressive behavior on smartphone use, and the condition of the schoolchildren system in Indonesia is still unstable. This provides a good warning about the risks associated with smartphone use among students. The purpose of this study is to develop an advisory position to monitor the integration of smartphone apps while improving mental and physical health. The correlation between the research results regarding the development of an advisor position to monitor smartphone app integration and the improvement of mental and guidance in the use of smartphone apps can positively contribute to the mental and physical health of use. Advisors play an important role in providing support and direction that can improve user's well-being in the face of digital technology.

Method

This research is a quantitative study conducted through structured questions to each participant, which are then answered, followed by an analysis of the data collected, and then presented to the researcher (Dhaifullah et al., 2022). The definition of correlational research is one type of research that seeks to determine how closely or not closely one variable is related to another variable or more than one variable, called correlation analysis (Rahmi Pertiwi et al., 2023). The type of survey research method chosen is correlation. Data collection was carried out for three weeks in January 2024. During this time, 87 students from IAIN Kerinci participated in filling out the scale that was distributed online. The first page was a request for willingness to be a respondent, which was followed by filling in personal identity, demographic variables, and questionnaire statements. The characteristics of the respondents can be seen in Table 1.

Table 1 Characteristics of Research Respondents

Characteristics	Category	Frequency	Percentage
Batch/semester	2023/I	24	27,6%

	2022/III	31	35,6%
	2021/V	15	17,2%
	2020/VII	9	10,3%
	2019/IX	5	5,7%
	2018/XI	3	3,4%
Gender	Male	49	56,3%
	Female	38	43,7%
IPK	>3.50	55	63,2%
	<3.50	32	36,8%
Length of time used in a day to access the internet	< 3 hours	21	24,1%
	3 - 5 hours	39	44,8%
	5 - 7 hours	13	14,9%
	> 7 hours	17	16,1%
Living Area	City	40	46%
	Village	47	54%

The table above illustrates that the respondents who participated in the survey were mostly female, namely men consisting of 49 people, or 56.3%, and 38 people, or 43.7%. In addition, based on class or semester, 24 people, or 27.6%, occupied the second position for the class of 2023/I, followed by 31 people, or 35.6%, for the class of 2022/III, 15 people, or 17.2%, 9 people, or 10.3%, for the class of 2020/VII, 5 people, or 5.7%, and 3 people, or 3.4%, for the class of 2018/XI. Then based on GPA followed by grades > 3.50, namely 55 people or 63.2%, while with grades < 3.50 as many as 32 people or 36.8%. Then the length of time used in a day to access the internet, with a range of < 3 hours for as many as 21 people or 24.1%, 3-5 hours for as many as 39 people or 44.8%, 5-7 hours as many as 13 people or 14.9%, and for a range of > 7 hours as many as 17 people or 16.1%. Then followed by the area of residence in the area in city as many as 40 people or 46%, while in the area in the village as many as 47 people or 54%.

Smartphone Addiction Scale

The researchers adjusted the level of smartphone addiction research started by Min Know, Dai-Jin Kim, Hyun Cho, and Soo Yang (Kwon et al., 2013). Using a 5-choice Likert scale, this scale has 10 items (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always). The internal consistency and validity of SAS competitors were compared using Cronbach's alpha of 0.911. The researcher again conducted internal consistency testing using Cronbach's alpha which resulted in a score of 0.725.

Loneliness Scale

We adopted the loneliness scale from the UCLA Loneliness scale (person tree) developed by Daniel W Russell. (Russell, 1996). This 20-item scale uses a 4-point Likert scale (1 means never, 2 rarely, 3 sometimes, and 4 always). This scale shows high reliability which is in the range of 0.89 to 0.94. The reliability test over one year resulted in a score of 0.73. The researcher again conducted internal consistency testing using Cronbach's Alpha which resulted in a score of 0.873.

Aggressive Behavior Scale

The researchers modified an aggressive study conducted by Sara C. Haden, Angela Scarpa, and Matthew S. Stanford (Haden et al., 2008). This 30-item Likert scale has five options: 1 for Strongly Agree, 2 for Agree, 3 for Neutral, 4 for Disagree, and 5 for Strongly Disagree. This scale consists of two dimensions, namely impulsive and premeditated. With Cronbach's alpha of 0.77 for IA (male = .78 and female = .76) and 0.81 for PM (male = .82 and female = .81), the IA and PM scales showed strong internal consistency. The scales showed strong correlations. ($p < .01$) at .32 ($r = .31$ for men and .33 for women). The researcher again conducted internal consistency testing using Cronbach's Alpha which resulted in a score of .745.

Data analysis in descriptive statistics in this study (mean, standard deviation, and percentage) was used to determine the response rate of each variable. Furthermore, hypothesis testing was carried out using simple and multiple regression techniques. Regression analysis is a statistical data analysis method that is often used to assess a single variable and investigate the relationship between multiple variables. (Nurdin, 2018). Several considerations must be made before using regression analysis We thoroughly tested normality, linearity, multicollinearity, and heteroscedasticity in this investigation. SPSS software, version 25.00, was used to conduct this investigation.

Result and Discussion

Descriptive analysis was used in this study to analyze the data to understand the significance of each variable. Table 2 presents the results of the descriptive analysis. On the loneliness variable, the mean deviation is 7.37 and the standard deviation is 48.12. These values are classified as moderate. The most frequent responses in the moderate category were high, low, high, very high, and very low. These results indicate that there are still some students who experience high levels of loneliness, perhaps even very high. For the learning aggressiveness variable, respondents were classified with an average of around 90.05. The majority of respondents fall into the "senior" category, but there are still some respondents with a significantly higher threshold of aggressive behavior, amounting to 4.59% of the overall population. Furthermore, the smartphone addiction variable is classified as high, but based on the frequency distribution, some students are classified as low, even very high, and very low.

Table 2 Descriptive analysis

Variables	Average	Level (%)				
		Very low	Low	Medium	High	Very high
Loneliness	48,12 (7,37)	1 (1,14)	24 (27,58)	54 (62,06)	6 (6,89)	2 (2,29)
Aggressive behavior	90,05 (16,13)	4 (4,59)	0 (0)	70 (80,45)	11 (12,64)	2 (2,29)
Smartphone addiction	30,29 (6,48)	3 (3,44)	14 (16,09)	54 (62,06)	13 (14,94)	3 (3,44)

As we have explained in the methodology section, several prerequisites must be met to conduct regression testing, including normality, multicollinearity, and heteroscedasticity. Table 3 displays the results of these tests. In the normality test, the significance value of the loneliness variable was found to be 0.056, the significance value of the aggressive behavior variable was found to be 0.002, and the significance value of the smartphone usage variable was found to be 0.000. These results indicate that all data tested have a normal distribution. In multicollinearity testing, there is no multicollinearity between variables because the VIF value is $1.138 < 10$. Furthermore, heteroscedasticity regression analysis on the religiosity variable produces a regression coefficient level of 0.805 and a significance of 0.999 which indicates no heteroscedasticity occurs.

Table 3 Classical Assumptions

No	Classical Assumptions	Sig.	Decision
1	Normality testing of loneliness	0.056 > 0.05	Normal

2	Normality testing of aggressive behavior	0.002 < 0.05	Normal
3	Normality testing of smartphone addiction	0.000 < 0.05	Normal
4	Multicollinearity	1.138*	No multicollinearity
5	Heteroscedasticity testing on the loneliness variable	0.999**	No heteroscedasticity
6	Heteroscedasticity testing on aggressive behavior variables	0.805**	No heteroscedasticity

Based on the data in Table 3, each conditional analysis was corrected. Next, the researchers used regression analysis to test their hypotheses with a mild bias to test the effects of loneliness and aggressive behavior on Smartphone use in doodling, and a regressive bias to test the effect of similarity. Table 4 illustrates the tests. Table 4 presents the regression analysis of the impact of loneliness on smartphone use. Table 4 presents 5.010 at a significance level of 0.000 for the t-value, indicating a significant impact of loneliness on smartphone usage.

Table 4 Simple regression testing of loneliness on smartphone addiction

Unstandardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta		
10.074	4.084		2.467	.016
.420	.084	.477	5.010	.000

The second hypothesis of this study was the existence of an aggressive learning curve concerning smartphone use, which was also tested using a simple regression model. Table 5 shows a t-value of approximately -.664 with a significance level of 0.508. This indicates that there is a noteworthy influence of aggressive behavior on smartphone usage.

Table 5 Simple regression testing of aggressive behavior on smartphone

Unstandardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta		
32.901	3.980		8.267	.000
-.029	.043	-.072	-.664	.508

The next step was to assess the impact of loneliness and aggressive behavior together on smartphone use. The test used multiple regression analysis. Table 6 shows the relevant test findings.

Table 6 Results of Multiple Regression Analysis of Loneliness and Aggressive Behavior on Smartphone Addiction

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	4.599	6.592		.698	.487
loneliness	.043	.041	.107	1.057	.293
Aggressive behavior	.453	.089	.515	5.068	.000

Based on Table 6, the t-count is about 1.057 at a significant level of 0.2933; therefore, Ha is accepted, which indicates the regression coefficient is significant. Furthermore, the t-count reaches 5.068 at the significant level, which indicates that Ha is accepted, which

indicates this regression coefficient is important. The findings of this study indicate that there is a significant influence of religiosity and perfectionism.

The results showed that student loneliness was in the moderate category. Loneliness, also known as solitude, is a psychological condition in which a person has strong and different emotions from everyday experiences. The correlation between loneliness and research findings in the context of mental and physical health shows the negative impact loneliness has on a person's mental and physical health (Faiz et al., 2019; Hakim & Subarkah, 2022). Research results that there is an influence of loneliness with smartphones, and previous studies have shown that people who experience loneliness tend to take longer to adjust their loneliness symptoms through cell phones or the internet. Thus, loneliness is associated with higher internet use, affecting smartphone use (Hisbiyyah, 2023). Researchers indicated a substantial correlation between self-control and loneliness about cell phones (Anggraeni & Meiyuntariningsih, 2021). Researchers also noted that there is a significant correlation between loneliness and sensation-seeking with smartphone addiction among young people (Anugrah et al., 2023). In addition, researchers have shown a substantial correlation between loneliness and smartphone use (Aprilia, 2020). Based on the results of relevant research, loneliness tends to be related to individual internal factors such as feelings of isolation and lack of social interaction, while internet addiction and smartphone use are more related to behaviors that can lead to dependence on technology (Nurhayat, 2021)

The findings of this study indicate that aggressive students are in the moderate category. According to Neil Miller and John Dollard, violent behavior is seen as a form of response and reaction to learning objectives taught early on. Its correlation with research findings may vary depending on the specific context of the study. For example, research may look for links between violent experiences in childhood learning and later aggressive behavior. The results of such research may provide further insight into how such experiences contribute to the development of violence (Susantyo, 2011). This research builds upon previous findings by Oktalia (Wiyono & Ellisiya, 2024) that explored the link between aggressive behavior and online gaming hubs. Additionally, (Saraswati et al., 2021) reported a rise in negative symptoms associated with excessive gaming, including increased agitation, physical injuries, and hindered motor development in children. These studies, along with the hypothesis proposed by (Mil & Shanzivani, 2023) suggesting a detrimental effect of smartphone use on aggressive behavior in children, served as the foundation for this current investigation. (Ilyas, 2022) identified a significant association between aggressive behavior and online gaming. Finally, Kurnia's (Aran & Elwindra, 2021) research data provided concrete evidence of a strong correlation between the frequency of smartphone use and aggressive behavior among grade IX students at SMP N 13 Magelang. These prior studies collectively provided a compelling rationale for investigating the potential relationship between smartphone use and aggressive behavior in children. (Kurnia, 2019)

The overall study shows that students who are addicted to smartphones fall into the moderate category. Smartphone addiction refers to a person's dependence or willingness to use a smartphone continuously without realizing any negative effects (Soedarto, 2018). Previous researchers have also found that there is a significant difference between smartphone addiction, this can be explained by the fact that the more children use smartphones, their aggression also tends to increase. On the other hand, children who experience smartphone addiction will have weak social bonds (Rohman, 2019). Researchers found a negative correlation between smartphone use and internet use based on the data and analysis they collected during the study. Factors such as user behavior, the internet usage habits, or changing trends in technology usage may be the basis for the

statement. Other studies have shown that the more frequent internet use, the higher the level of social isolation and loneliness (Yayan et al., 2019).

The results of this study cannot reduce loneliness or aggressive behavior related to smartphone use because the findings of this study only allowed a small number of participants to participate. Recognizing that smartphone use is not very effective in reducing feelings of loneliness or aggression, professionals in psychology and counseling can influence their perceptions in other areas of social interaction and mental health. They can provide alternative investment strategies, reduce social media fatigue in offline social activities, and offer holistic support in overcoming lonely and aggressive feelings.

Conclusion

The current study presents interesting, yet seemingly contradictory, findings regarding smartphone use. While the initial results suggest a negative correlation between loneliness and smartphone use, implying increased use for those feeling lonely, the data also indicates that aggressive behavior negatively impacts smartphone use. This inconsistency warrants further exploration. However, the research does offer a clear takeaway: excessive smartphone use appears detrimental, potentially leading to depression, anxiety, and sleep disturbances. This highlights the concern that such use might contribute to the development of aggressive tendencies in young adults.

Building on these findings, future research could delve deeper into how digital education and media literacy programs can empower individuals to manage their smartphone use effectively. Additionally, exploring interventions that address loneliness, aggressive behavior, and problematic smartphone use together could be highly beneficial.

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