

The Relationship between the Level of Dependence and Duration of Gadget Use with Anxiety in Adolescents

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ABSTRACT

The increasing use of gadgets among adolescents may affect mental health, particularly anxiety levels. This study aimed to determine the relationship between gadget dependency levels and anxiety among adolescents at SMA Negeri 1 Wonosari. This study employed a quantitative analytic design with a cross-sectional approach. The sample consisted of 60 respondents selected using a total sampling technique. The instruments used were the Smartphone Addiction Scale (SAS) and the Generalized Anxiety Disorder-7 (GAD-7). Data were analyzed using the Chi-Square test with a significance level of 0.05. The results showed that most respondents had moderate levels of gadget dependency and anxiety. Statistical analysis revealed a significant relationship between gadget dependency and anxiety levels among adolescents ($p < 0.05$). Adolescents with higher levels of gadget dependency tended to experience higher anxiety levels. Excessive gadget use may negatively affect emotional balance, sleep quality, and social interaction among adolescents. In conclusion, gadget dependency is associated with anxiety levels among adolescents. Therefore, adolescents are expected to use gadgets wisely to reduce the risk of mental health problems.

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1. INTRODUCTION

The development of information and communication technology has brought significant changes to adolescents' daily lives, particularly through the use of gadgets such as smartphones and tablets for communication, entertainment, and learning activities (1). The use of gadgets among adolescents continues to increase along with easier internet access and the rapid development of social media platforms (2). Adolescents are considered a vulnerable group to the influence of digital technology because they are in a dynamic phase of psychological and social development (15). High curiosity and environmental influences encourage adolescents to use gadgets excessively in their daily lives (4). Excessive gadget use may cause various negative impacts, such as decreased learning concentration, reduced direct social interaction, and sleep disturbances among adolescents (12).

The increasing accessibility of digital technology has also

daily activities (3). Although gadgets provide benefits in terms of information access and communication, uncontrolled use may negatively affect adolescents' emotional and psychological well-being (14).

Adolescence is a transitional stage characterized by emotional instability, identity exploration, and increased sensitivity to environmental influences (15). In this phase, adolescents tend to seek social acceptance and emotional validation through digital interactions and social media platforms (7). Excessive exposure to online content may increase emotional vulnerability, especially when adolescents are exposed to cyberbullying, unrealistic social comparisons, or negative digital information (5). Continuous interaction with digital media may also reduce adolescents' ability to manage emotions effectively and increase psychological distress over time (9). Therefore, uncontrolled gadget use may contribute to emotional and behavioral problems among adolescents (13).

One of the psychological impacts commonly associated with excessive gadget use is anxiety (5). Anxiety is an emotional condition characterized by excessive worry, tension, fear, and nervousness toward certain situations (15). Among adolescents, anxiety may be influenced by academic pressure, social relationships, and continuous exposure to digital information through social media and the internet (7). Intensive social media use may also encourage adolescents to compare themselves with others, which can negatively affect their mental health conditions (8). Adolescents who are unable to control emotional responses to digital stimuli may experience higher levels of stress and anxiety in their daily lives (9).

High duration of gadget use has been associated with an increased risk of anxiety disorders among adolescents (13). Adolescents who use gadgets for long periods every day tend to experience mental fatigue, sleep problems, and decreased quality of direct social interaction (1). In addition, continuous gadget use may increase emotional dependency on digital devices, causing adolescents to feel difficulty separating themselves from their gadgets (9). This condition may trigger feelings of restlessness and discomfort when gadgets are not accessible for a certain period (10). Excessive exposure to online content may also influence adolescents' emotional stability and increase the risk of behavioral problems (16).

Besides usage duration, the level of gadget dependency is also considered an important factor affecting adolescents' mental health (3). Gadget dependency is characterized by difficulty controlling gadget use, strong urges to continuously use gadgets, and feelings of anxiety when access to gadgets is restricted (4). This condition may disturb emotional balance and increase the risk of psychological disorders, including anxiety among adolescents (14). Uncontrolled gadget use may also influence adolescents' behavior, emotions, and social abilities in everyday life (11). Previous studies have also reported that problematic smartphone use is associated with emotional distress, decreased self-control, and poor psychological adjustment among adolescents (3).

The influence of gadget use on adolescents' mental health may also be affected by several supporting factors such as family environment, parenting style, peer interaction, academic stress, and self-control abilities (10). Adolescents with poor emotional regulation and low self-control are more likely to develop gadget dependency and experience psychological problems related to excessive gadget use (9). In addition, the lack of parental supervision regarding gadget use may increase the risk of adolescents accessing inappropriate content and spending excessive time in digital activities (2). These conditions may eventually affect adolescents' emotional balance, social relationships, and overall mental health status (14).

Several previous studies have examined the relationship between gadget use and mental health among adolescents. However, the findings remain inconsistent because the influence of gadget use may differ depending on social environment, individual characteristics, patterns of gadget use, and psychological conditions of adolescents (8). Some studies reported a strong relationship between gadget addiction and anxiety, while others found that gadgets may also function as entertainment and coping mechanisms under certain conditions (3). Therefore, further research is still needed to better understand the relationship between gadget dependency and anxiety among adolescents.

To measure gadget dependency and anxiety levels among adolescents, this study used the Smartphone Addiction Scale (SAS) and the Generalized Anxiety Disorder-7 (GAD-7), which have been widely used in adolescent mental health research (5). Based on the background above, this study aimed to determine the relationship between gadget dependency levels and anxiety among adolescents, particularly students at SMA Negeri 1 Wonosari.

RESULTS AND DISCUSSION

Respondents Characteristics

Table 1. Distribution of Respondents Characteristics

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	30	50.0
Female	30	50.0

Age		
15 years	18	30.0
16 years	25	41.7
17 years	17	28.3
Class		
Grade X	20	33.3
Grade XI	20	33.3
Grade XII	20	33.3
Duration of Gadget Use		
< 2 hours	15	25.0
2–4 hours	15	25.0
5–7 hours	15	25.0
> 7 hours	15	25.0
Total	60	100

Based on Table 1, the distribution of respondents by gender showed an equal proportion between male and female respondents, with 30 respondents each (50.0%). This indicates that there was no gender dominance in this study, allowing the data to represent adolescents more proportionally. A balanced gender distribution may also reduce bias in analyzing the relationship between gadget dependency and anxiety levels among adolescents.

Based on age characteristics, most respondents were 16 years old, totaling 25 respondents (41.7%), followed by 15 years old with 18 respondents (30.0%), and 17 years old with 17 respondents (28.3%). This finding indicates that most respondents were in middle adolescence, a developmental phase characterized by emotional instability, social adaptation, and increased interaction with digital technology.

The distribution based on class level showed that respondents from Grade X, Grade XI, and Grade XII had equal proportions, with 20 respondents each (33.3%). Equal representation from each class level provided a broader overview of gadget use behavior and anxiety conditions among high school students.

The duration of gadget use among respondents was evenly distributed across all categories. Each category, including <2 hours, 2–4 hours, 5–7 hours, and >7 hours per day, consisted of 15 respondents (25.0%). This indicates that the study involved adolescents with varying levels of gadget use intensity, enabling a more comprehensive analysis regarding gadget dependency and anxiety levels.

Distribution of Gadget Dependency Levels and Anxiety Levels

Table 2. Distribution of Gadget Dependency Levels and Anxiety Levels

Variables	Categories	Frequency (n)	Percentage (%)
Gadget Dependency Level	Low	10	16.7
	Moderate	35	58.3
	High	15	25.0
Anxiety Level	No anxiety	5	8.3
	Mild	20	33.3
	Moderate	25	41.7
	Severe	10	16.7
Total		60	100

Based on Table 2, most respondents had moderate levels of gadget dependency, totaling 35 respondents (58.3%). Meanwhile, 15 respondents (25.0%) were categorized as having high gadget dependency, and 10 respondents (16.7%) were categorized as having low dependency. These findings indicate that gadget use has become an essential part of adolescents' daily activities.

Moderate gadget dependency suggests that adolescents frequently use gadgets for communication, entertainment, learning activities, and social media access. However, uncontrolled gadget use may gradually develop into higher dependency levels, potentially affecting adolescents' emotional and social conditions.

Regarding anxiety levels, most respondents were categorized as having moderate anxiety, totaling 25 respondents (41.7%). Mild anxiety was experienced by 20 respondents (33.

The Relationship Between Gadget Dependency Levels and Anxiety Levels

Table 3. The Relationship Between Gadget Dependency Levels and Anxiety Levels

Gadget Dependency Level	No Anxiety	Mild	Moderate	Severe	Total	p-value
Low	4	5	1	0	10	0.001*
Moderate	1	14	16	4	35	
High	0	1	8	6	15	
Total	5	20	25	10	60	

Based on Table 3, respondents with low gadget dependency levels were mostly categorized as having no anxiety and mild anxiety. Meanwhile, respondents with moderate gadget dependency levels were primarily categorized as experiencing mild and moderate anxiety. Respondents with high gadget dependency levels tended to experience moderate and severe anxiety.

The findings showed an increasing tendency of anxiety levels along with higher gadget dependency levels. Adolescents with high gadget dependency were more likely to experience emotional disturbances compared to those with low dependency levels. Excessive gadget use may reduce direct social interaction, disturb sleep quality, and increase exposure to digital information that may trigger anxiety.

The Chi-Square test results showed a p-value of 0.001 ($p < 0.05$), indicating a significant relationship between gadget dependency levels and anxiety levels among adolescents at SMA Negeri 1 Wonosari. These findings suggest that higher gadget dependency is associated with higher anxiety levels among adolescents.

This study is consistent with previous studies which reported that excessive gadget use may negatively affect adolescents' mental health, particularly increasing the risk of anxiety disorders. Therefore, supervision and education regarding healthy gadget use are important to help adolescents control gadget use and maintain emotional and social well-being.

This study aimed to determine the relationship between gadget dependency levels and anxiety levels among adolescents at SMA Negeri 1 Wonosari. The findings showed that most respondents had moderate levels of gadget dependency and moderate levels of anxiety. Statistical analysis indicated a significant relationship between gadget dependency levels and anxiety levels among adolescents. The results suggest that higher levels of gadget dependency are associated with higher levels of anxiety among respondents.

In this study, respondents with low gadget dependency levels tended to experience lower anxiety levels compared to respondents with high gadget dependency levels. This finding indicates that excessive gadget use may affect adolescents' psychological conditions. Adolescents who excessively use gadgets are more likely to experience reduced direct social interaction, sleep disturbances, and increased exposure to digital information that may trigger stress and anxiety. Continuous social media use may also encourage adolescents to compare themselves with others, thereby increasing the risk of anxiety.

The findings of this study are consistent with previous studies. Keles et al. stated that excessive social media and gadget use are associated with increased anxiety disorders and psychological distress among adolescents (5). Marciano et al. also reported that high digital media use may negatively affect adolescents' mental health, particularly by increasing emotional stress and anxiety levels (8). Furthermore, Busch and McCarthy explained that smartphone dependency may contribute to mental health problems, including anxiety caused by difficulties in controlling gadget use in daily life (3).

In addition, Rini and Huriyah explained that gadget addiction among adolescents may reduce sleep quality, decrease concentration, and interfere with emotional regulation, which may indirectly increase anxiety symptoms (12). Sleep disturbances caused by excessive gadget use may lead to emotional instability and reduced coping ability among adolescents. Adolescents who frequently use gadgets at night also tend to experience fatigue and psychological distress due to insufficient rest.

Simanjuntak and Wulandari reported that gadget addiction may contribute to emotional and behavioral disorders among adolescents, including irritability, excessive worry, mood instability, and social withdrawal (13). Adolescents with high gadget dependency may become more emotionally sensitive because they are continuously exposed to digital stimulation and social media pressure. This condition may increase psychological vulnerability, especially among adolescents who have poor emotional control and limited social support.

Research conducted by Mulyanti et al. also found that gadget addiction is associated with lower emotional intelligence among adolescents (9). Adolescents with lower emotional intelligence may experience difficulties in managing stress, controlling emotions, and adapting to social situations, which can contribute

have reduced face-to-face interaction with family and peers, potentially causing feelings of loneliness and emotional isolation. Lack of direct social interaction may weaken emotional support systems that are important for maintaining adolescents' psychological well-being.

Hoirot et al. explained that gadget addiction among adolescents is often influenced by environmental factors, peer relationships, entertainment needs, and the inability to control gadget use behavior (4). Adolescents are in a developmental phase characterized by curiosity and emotional instability, making them more susceptible to problematic gadget use. Continuous exposure to social media content, online games, and digital entertainment may increase dependence on gadgets as a coping mechanism for stress and boredom.

Moreover, Wicaksono et al. stated that uncontrolled gadget use may disturb adolescents' emotional balance and increase the risk of mental health problems, including anxiety and stress (14). Excessive digital exposure may overload adolescents with information and emotional stimulation, causing difficulties in emotional regulation. Adolescents may also feel pressure to remain constantly connected to social media, which can contribute to fear of missing out (FOMO), insecurity, and anxiety symptoms.

However, gadget use does not always produce negative impacts when used wisely and appropriately. Gadgets may also help adolescents obtain information, maintain communication, and reduce stress through entertainment activities. Busch and McCarthy emphasized that smartphones can provide psychological benefits when used in moderation and for adaptive purposes, such as social support, educational activities, and emotional coping (3). Therefore, the influence of gadgets on mental health is not only determined by the intensity of use but also by the purpose, quality, and pattern of gadget use itself.

The high level of gadget dependency among adolescents in this study may also be influenced by the increasing integration of digital technology into educational and social activities. Since the COVID-19 pandemic, adolescents have become more accustomed to online learning systems, digital communication, and virtual entertainment, which may contribute to prolonged gadget exposure (8). This situation has made gadgets an inseparable part of adolescents' daily lives, both for academic and non-academic purposes.

Support and supervision from parents, schools, and the surrounding environment are essential to help adolescents use gadgets in a healthy and balanced manner. Parents are expected to provide guidance regarding screen time limits and healthy digital habits, while schools may contribute through mental health education and digital literacy programs. Adolescents also need to be encouraged to engage in physical activities, social interaction, and stress management strategies to reduce the negative psychological effects of excessive gadget use.

This study has several limitations, including the limited number of respondents and the use of a cross-sectional design that only describes conditions at a specific time. In addition, the data were collected using self-reported questionnaires, which may lead to subjective responses from respondents. Other factors influencing anxiety levels, such as family conditions, academic stress, personality traits, sleep quality, and social support, were also not analyzed in this study. Nevertheless, this study provides an overview of the relationship between gadget dependency levels and anxiety levels among adolescents and may serve as a reference for future studies related to adolescent mental health in the digital era.

2. CONCLUSION

This study concluded that most respondents had moderate levels of gadget dependency and moderate levels of anxiety. The results of statistical analysis showed a significant relationship between gadget dependency levels and anxiety levels among adolescents at SMA Negeri 1 Wonosari. Adolescents with higher gadget dependency levels tended to experience higher anxiety levels. Excessive gadget use may negatively affect adolescents' psychological conditions, including increased anxiety, sleep disturbances, reduced direct social interaction, and emotional imbalance.

Based on these findings, adolescents are expected to use gadgets wisely by managing the duration and purpose of gadget use appropriately. Parents and schools are also encouraged to provide supervision, education, and guidance regarding healthy gadget use among adolescents. In addition, health professionals are expected to promote mental health education and preventive efforts related to anxiety disorders among adolescents. Future researchers are recommended to involve larger sample sizes and include additional variables such as sleep quality, social support, academic stress, and patterns of gadget use to obtain more comprehensive research findings.

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