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Original Article

The Relationship Between Alexithymia and Smartphone Addiction Among Adolescents in Surabaya

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Abstract

Alexithymia is characterized by difficulties in identifying and expressing emotions and is considered to play an important role in influencing excessive gadget use among adolescents. This study aimed to determine the relationship between alexithymia and gadget addiction among adolescents using questionnaires to assess the level of alexithymia and smartphone addiction. This study employed a descriptive correlational design with a cross-sectional approach. The population consisted of 188 adolescents, with 130 respondents selected through non-probability purposive sampling. The independent variable was alexithymia, while the dependent variable was gadget addiction. Data were collected using the Alexithymia Questionnaire and Smartphone Addiction Questionnaire and analyzed using the Pearson correlation test with a significance level of $\alpha = 0.05$. The results showed that most respondents experienced smartphone addiction at a high level. Statistical analysis revealed a significant relationship between alexithymia and gadget addiction, with a p-value of 0.000 ($p < 0.05$) and a correlation coefficient of 0.451, indicating a moderate positive correlation. Therefore, adolescents with higher levels of alexithymia tended to experience higher levels of gadget addiction. These findings suggest the importance of emotional regulation and psychological interventions in preventing gadget addiction among adolescents.

Keywords: Adolescents; Alexithymia; Gadget Addiction

Introduction

The rapid increase in gadget use among adolescents has become a growing public health concern due to its association with addictive behaviors and adverse psychological outcomes (Dian Ayuningrum et al., 2026). Excessive gadget use has been linked to reduced social interaction, emotional dysregulation, anxiety, depression, and impaired academic performance (Tasijawa et al., 2024). In this context, alexithymia, defined as difficulty identifying and expressing emotions, has emerged as an important psychological factor associated with gadget addiction (Taş et al., 2026). Individuals with alexithymia tend to use digital devices as a coping mechanism to escape negative emotions and psychological discomfort, thereby increasing the risk of problematic gadget use (Sun et al., 2026). This phenomenon is particularly concerning during adolescence, a developmental stage characterized by emotional instability, identity formation, and increased vulnerability to maladaptive behaviors.

Adolescence is a transitional period marked by significant physical, psychological, and social changes (Sepang et al., 2025). According to Hurlock, adolescents commonly experience unstable emotions and difficulties in emotional adjustment (Andaresta, 2022). Limited emotional regulation abilities, combined with environmental stressors and inadequate social support, may contribute to the development of alexithymic traits (Andaresta, 2022). Alexithymia itself is considered a subclinical condition characterized by difficulty recognizing and describing emotions, as well as an externally oriented cognitive style (Pisani et al., 2021). Although it is not classified as a formal mental disorder, alexithymia has been widely associated with psychosomatic symptoms, addictive behaviors, and interpersonal difficulties (Sun et al., 2026). Adolescents with alexithymia may therefore be more susceptible to excessive gadget use as an alternative means of emotional expression and social interaction.

The prevalence of mental health and gadget-related problems among Indonesian adolescents has shown a concerning upward trend. Data from the Indonesian Ministry of Health reported that approximately 6% of adolescents aged 15 years and older experienced emotional disorders in 2020 (Kementerian Kesehatan, 2025). Furthermore, reports from Menur Mental Hospital in East Java demonstrated a substantial increase in adolescent psychiatric admissions in 2023, primarily related to internet

dependency, gaming addiction, and exposure to pornography. National data from the Indonesian Internet Service Providers Association (APJII) also indicated a continuous rise in internet use, reaching 215 million users in 2023 (APJII, 2023). Increasing digital penetration among adolescents has contributed to higher exposure to gadgets and greater vulnerability to addictive behaviors (Ting & Chen, 2020). However, mental health services in Indonesia remain unevenly distributed, particularly in rural areas, limiting adolescents' access to psychological support and early intervention.

Previous studies have demonstrated that excessive gadget use is associated with various physical and psychological problems, including headaches, sleep disturbances, decreased life satisfaction, anxiety, depression, and impaired cognitive functioning (Huang et al., 2023) Adolescents are particularly vulnerable to prolonged screen time due to their developmental characteristics and high adaptability to technological innovations (Qi & Yang, 2024). Existing literature has also highlighted the role of alexithymia in problematic gadget use (Zhou et al., 2022). Individuals with alexithymia often perceive online communication as safer and more comfortable because it reduces the need for direct emotional interaction (Adıgüzel & Su Topbas, 2025). According to the cognitive-behavioral model of excessive gadget use, online communication may provide temporary emotional relief and a sense of interpersonal control, thereby reinforcing addictive behavior (Xiao & Huang, 2022). Nevertheless, studies specifically examining the relationship between alexithymia and gadget addiction among Indonesian adolescents remain limited.

A preliminary study conducted at SMA Muhammadiyah 10 Surabaya on February 13, 2025, found that 70% of surveyed students showed indications of gadget addiction. These findings suggest that gadget addiction represents a significant issue among adolescents in the school setting. Considering the increasing prevalence of gadget addiction and the potential role of alexithymia in influencing adolescents' emotional regulation and behavioral patterns, further investigation is needed. Therefore, this study aims to analyze the relationship between alexithymia and the incidence of gadget addiction among Grade XI adolescents at SMA Muhammadiyah 10 Surabaya. The findings of this study are expected to contribute to the development of preventive and intervention strategies

targeting adolescent mental health and healthy digital behavior.

Method

Research Design

This study employed a descriptive correlational design with a cross-sectional approach to examine the relationship between alexithymia and gadget addiction among adolescents. A descriptive correlational design was considered appropriate because it enables the identification and analysis of associations between the independent and dependent variables at a single point in time. In this study, alexithymia served as the independent variable, while gadget addiction was the dependent variable.

Population, Sample, and Setting

The study was conducted among Grade XI students at SMA Muhammadiyah 10 Surabaya during the 2023/2024 academic year. The target population consisted of 188 students aged 16–18 years. A total of 130 students were recruited as participants using a purposive sampling technique based on predetermined inclusion criteria established by the researchers.

Variables, Instruments, and Data Collection

The independent variable in this study was alexithymia, whereas the dependent variable was gadget addiction among adolescents. Data were collected using self-administered questionnaires consisting of the Toronto Alexithymia Scale-20 (TAS-20) and the Smartphone Addiction Scale (SAS).

Alexithymia was measured using the Toronto Alexithymia Scale-20 (TAS-20), which had been adapted and modified by the researchers to suit the study context. The instrument consisted of 20 items rated on a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Higher scores indicated higher levels of alexithymia.

Gadget addiction was assessed using the Smartphone Addiction Scale (SAS), which was also adapted and modified by the researchers. The questionnaire consisted of 21 items measured on a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Higher scores reflected greater levels of gadget addiction.

Data collection was conducted after obtaining permission from the school authorities and informed consent from the participants. Respondents

completed the questionnaires anonymously to ensure confidentiality and encourage honest responses.

Data Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS). Univariate analysis was conducted to describe the characteristics of each variable through frequency distributions and descriptive statistics. Subsequently, bivariate analysis was carried out using the Pearson correlation test to examine the relationship between alexithymia and gadget addiction.

The Pearson correlation test was selected because the data were measured on an interval scale and met the assumption of normal distribution. This analysis was used to determine both the direction and the strength of the relationship between the variables. Statistical significance was set at $p < 0.05$. A p-value below 0.05 indicated a statistically significant relationship between alexithymia and gadget addiction among adolescents, whereas a p-value greater than 0.05 indicated no significant relationship.

Ethical Consideration

This study received ethical approval from the Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Surabaya with ethical clearance number: 009/KEPK/F/III/FIK/2025. All participants were informed about the purpose of the study, and their participation was voluntary. Confidentiality and anonymity of the respondents were maintained throughout the research process.

Results

The results of this study present an overview of the research setting, respondents' demographic characteristics, and the findings regarding the relationship between alexithymia and gadget addiction among Grade XI students at SMA Muhammadiyah 10 Surabaya.

Overview of the Research Setting

This study was conducted at SMA Muhammadiyah 10 Surabaya, located on Jl. Genteng Muhammadiyah No. 39, Surabaya, East Java, Indonesia. The school is situated in the central area of Surabaya, providing strategic accessibility and ease of transportation through both private and public transportation facilities. As one of the educational institutions located in an urban setting, the school environment reflects the increasing exposure of adolescents to digital technology and gadget use in their daily activities.

Characteristics of Respondents

The demographic characteristics of respondents in this study included gender, age, and educational level. A total of 130 Grade XI students participated in the study. The distribution of respondents' characteristics is presented in Table 1.

Table 1. Frequency Distribution of Respondents' Characteristics Among Grade XI Students at SMA Muhammadiyah 10 Surabaya

Age	Frequency (N)	Percentage (%)
16 years old	52	39,2
17 years old	58	44,6
18 years old	20	15,4
Total	**130**	**99,2**
Gender	**Frequency (N)**	**Percentage (%)**
Female	42	32,3
Male	88	67,7
Total	**130**	**100**
Class	**Frequency (N)**	**Percentage (%)**
XI 1	42	23,3
XI 2	9	6,9
XI 3	11	8,5
XI 4	10	7,7
XI 5	5	3,8
XI 6	7	5,4
XI 7	7	5,4
XI 8	10	7,7
XI 9	6	4,6
XI 10	6	4,6
XI 11	17	13,1
Total	**130**	**100**

Based on Table 1, the findings showed that the majority of respondents were 17 years old, representing the transitional stage from adolescence to early adulthood, with 58 respondents (44.6%). Regarding gender distribution, most respondents were male, accounting for 88 students (67.7%), while female respondents accounted for 42 students (32.3%).

Based on class distribution, the largest proportion of respondents was from Class XI-11, consisting of 42 students (32.3%), whereas the smallest proportion was from Class XI-5, consisting of 5 students (3.8%).

Overview of Alexithymia Among Grade XI Students at SMA Muhammadiyah 10 Surabaya

Table 2 presents the frequency distribution of respondents based on the level of alexithymia among Grade XI students at SMA Muhammadiyah 10 Surabaya.

Alexithymia	Frequency	Percentage
High	74	56,9
Medium	37	28,5
Low	19	14,6
Total	**130**	**100**

Based on the findings presented in Table 2, the majority of respondents demonstrated a high level of alexithymia, with 74 out of 130 respondents (56.9%) categorized as having high alexithymia.

Overview of Gadget Addiction Among Grade XI Students at SMA Muhammadiyah 10 Surabaya

Table 3 presents the frequency distribution of respondents based on the level of gadget addiction among Grade

XI students at SMA Muhammadiyah 10 Surabaya.

Gadget Addiction	Frequency	Percentage
High	77	59,2
Medium	38	29,2
Low	15	11,5
Total	**130**	**100**

Based on the findings presented in Table 3, the majority of respondents were categorized as having a high level of gadget addiction, with 77 out of 130 respondents (59.2%) falling into the high addiction category.

The results of the Pearson correlation analysis demonstrated a statistically significant relationship between alexithymia and gadget addiction among Grade XI students at SMA Muhammadiyah 10 Surabaya, with a p-value of 0.000 ($p < 0.05$). The correlation coefficient obtained was $r = 0.451$, indicating a moderate positive relationship between the two variables. This finding suggests that higher levels of alexithymia were associated with higher levels of gadget addiction among adolescents.

Alexithymia	Gadget addiction						Total	
	High		Medium		Low		F	%
	F	%	F	%	F	%		
High	77	59,2	11	14,9	3	4,1	77	59,2
Medium	10	27,0	38	29,2	6	16,2	38	29,2
Low	7	36,8	6	31,6	15	11,5	15	11,5
Total	77	59,2	38	29,2	15	11,5	130	100
Pearson Statistical Test	Corelation Coeffficion: 0,451						p-value: 0,000 <α 0,05	

Based on Table 4, respondents with high levels of alexithymia and high levels of gadget addiction accounted for 77 respondents (59.2%). Meanwhile, respondents with moderate alexithymia and moderate gadget addiction comprised 38 respondents (29.2%), while those with low alexithymia and low gadget addiction consisted of 15 respondents (11.5%).

Based on the statistical analysis, the alternative hypothesis (H1) was accepted and the null hypothesis (H0) was rejected, confirming that a significant relationship exists between alexithymia and gadget addiction among Grade XI students at SMA Muhammadiyah 10 Surabaya.

Discussion

Characteristics of Respondents Among Grade XI Students at SMA Muhammadiyah 10 Surabaya

Based on the findings of this study involving 130 respondents, the majority of participants were male, accounting for 88 respondents (67.7%), while female respondents comprised 42 respondents (32.3%). Regarding age distribution, most respondents were 17 years old, with 58 respondents (44.6%), followed by 16-year-old adolescents with 51 respondents (39.2%) and 18-year-old adolescents with 20 respondents (15.4%).

Previous studies have indicated that gender differences influence patterns of gadget use among adolescents (Primadiana et al., 2019). According to Primadiana et al. (2019) male adolescents tend to use gadgets primarily for online gaming and information seeking, whereas female adolescents are more likely to engage in chatting, social networking, blogging, and updating social media platforms. Similarly, Li et al. (2026) reported that female adolescents generally demonstrate a stronger desire for communication and social interaction, which encourages more frequent gadget use, particularly for accessing social networking applications and entertainment-related information.

In terms of developmental stage, adolescents aged 16–18 years are considered to be in the transition period from adolescence to early adulthood (Livanou et al., 2026). During this phase, individuals experience significant psychological, biological, and social changes, including emotional instability and cognitive development (Livanou et al., 2026). The rapid advancement of digital technology has contributed to changes in adolescent behavior, including increased dependency on gadgets, reduced physical activity, and decreased face-to-face social interaction (Seo et al., 2016). Nevertheless, technology can also provide positive benefits when used appropriately, particularly in supporting educational activities and skill development.

According to the researchers, gadget use among adolescents is influenced by both age and gender characteristics. Therefore, adolescents should be encouraged to maintain balanced gadget use to prevent negative impacts on social interaction and health (Kim et al., 2017). In addition, parental supervision, school support, and a positive social environment play essential roles in guiding adolescents toward healthy and productive technology use.

Overview of Gadget Addiction Among Grade XI Adolescents at SMA Muhammadiyah 10 Surabaya

The results of this study revealed that among 130 respondents, 11.5% were categorized as having low gadget addiction, 29.2% moderate gadget addiction, and 59.2% high gadget addiction. These findings indicate that the majority of adolescents in this study experienced a high level of gadget addiction.

Previous studies have identified alexithymia as one of the contributing psychological factors associated with gadget addiction (Taş et al., 2026). Zhou et al. (2022)explained that individuals with alexithymic characteristics often prefer communicating through gadgets because online interaction provides greater emotional comfort and social support compared to direct interpersonal communication. In addition, stated that male adolescents tend to use gadgets morDian Ayuningrum et al. (2026)e frequently, particularly for gaming and entertainment activities. Adolescents are generally more attracted to recreational internet use, such as social media and video games, rather than educational purposes.

The high prevalence of gadget addiction observed in this study may also reflect adolescents' increasing dependence on digital devices for communication, entertainment, and emotional regulation (Bapoğlu Dümenci & Turan, 2026). Excessive gadget use may negatively affect adolescents' psychological well-being, social relationships, and daily functioning if not adequately controlled (Dian Ayuningrum et al., 2026).

According to the researchers, gadget addiction among adolescents is influenced not only by entertainment-related factors but also by psychological conditions and social habits. Therefore, collaborative efforts involving parents, schools, and communities are necessary to promote healthy gadget use and encourage balanced social interaction among adolescents.

Relationship Between Alexithymia and Gadget Addiction Among Grade XI Adolescents at SMA Muhammadiyah 10 Surabaya

The results of the Pearson correlation analysis demonstrated a statistically significant relationship between alexithymia and gadget addiction among Grade XI students at SMA Muhammadiyah 10 Surabaya, with a p-value of 0.000 ($p < 0.05$). Respondents with high levels of alexithymia and high levels of gadget addiction accounted for 77 respondents

(59.2%). Furthermore, the correlation coefficient obtained was r = 0.451, indicating a moderate positive relationship between the two variables. These findings suggest that adolescents with higher alexithymia levels are more likely to experience higher levels of gadget addiction.

The findings of this study are consistent with previous research conducted by Ding et al. (2022), which reported a positive relationship between alexithymia and gadget addiction (r = 0.41, 95% CI = [0.37, 0.45]). Adolescents with alexithymic characteristics often experience difficulties in recognizing emotions, expressing feelings verbally, and maintaining effective interpersonal relationships (Ding et al., 2022). As a result, they may rely on gadgets and online communication as alternative means of emotional expression and social interaction. Gadget use may temporarily reduce feelings of loneliness, helplessness, and emotional discomfort (Dian Ayuningrum et al., 2026).

Similarly, Mei et al. (2018) reported a significant relationship between alexithymia and gadget addiction ($p < 0.001$). Gadgets may help adolescents with alexithymic characteristics regulate their emotions, manage mood disturbances, and facilitate communication in a way that feels safer and more comfortable (Mei et al., 2018). During adolescence, individuals experience rapid psychological development and a strong need for social acceptance and peer support (Tasijawa, 2021). When these emotional and social needs are not adequately fulfilled in direct social interactions, adolescents may increasingly rely on gadgets and internet-based communication to compensate for these unmet needs.

According to the researchers, alexithymia and gadget addiction demonstrate a reciprocal relationship. Adolescents with alexithymic tendencies may use gadgets as a coping mechanism to avoid emotional discomfort, while excessive gadget use may further impair emotional regulation and psychological well-being. Therefore, interventions focusing on emotional awareness, healthy coping strategies, and responsible gadget use are essential (Tasijawa & Siagian, 2022). Schools, parents, and communities should collaborate to provide emotional support, digital literacy education, and guidance to help adolescents maintain healthy social and emotional development.

Research Limitations

This study has several limitations that should be considered when

interpreting the findings. First, the cross-sectional design limits the ability to establish causal relationships between alexithymia and gadget addiction. Second, the use of self-report questionnaires may introduce response bias, including socially desirable responses and subjective interpretation by participants. Third, the purposive sampling technique may limit the representativeness of the sample. In addition, participants were recruited from only one school in Surabaya, which may reduce the generalizability of the findings to adolescents in other regions or educational settings. Therefore, future studies are recommended to employ longitudinal designs, larger sample sizes, and participants from multiple schools or regions to improve the generalizability and robustness of the findings.

Conclusion

Based on the findings of this study, it can be concluded that the majority of respondents were male adolescents, accounting for 88 respondents (67.7%), with most participants aged 17 years old, totaling 58 respondents (44.6%). The results also indicated that most respondents experienced high levels of gadget addiction and high levels of alexithymia.

Regarding the level of gadget addiction, 77 respondents (59.2%) were categorized as having high gadget addiction, 38 respondents (29.2%) moderate gadget addiction, and 15 respondents (11.5%) low gadget addiction. Statistical analysis using the Pearson correlation test demonstrated a significant relationship between alexithymia and gadget addiction among Grade XI students at SMA Muhammadiyah 10 Surabaya, with a p-value of 0.000 ($p < 0.05$). These findings indicate that higher levels of alexithymia are associated with higher levels of gadget addiction among adolescents.

Declaration of Interest

The authors declare that there are no conflicts of interest related to this study.

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Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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