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The Relationship between Self-Control and Digital Fatigue and Their Influence on Mindfulness in Gadget Users

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Abstract

This study aims to determine the influence of self-control and digital fatigue on mindfulness among active gadget users. The research employed a quantitative approach with a correlational design. The sample consisted of 101 respondents comprising adolescents and young adults who actively use gadgets. Data were collected through a questionnaire distributed online using Google Forms with a five-point Likert scale. Data analysis was conducted using SPSS through validity testing, reliability testing, normality testing, multiple linear regression analysis, and coefficient of determination analysis.

The results showed that self-control had a significant effect on digital fatigue with a significance value of 0.011 < 0.05. Furthermore, digital fatigue had a significant effect on mindfulness with a significance value of 0.000 < 0.05. Meanwhile, technology usage habits did not significantly affect mindfulness. Simultaneous testing indicated that self-control, technology usage habits, and digital fatigue collectively had a significant effect on mindfulness with a significance value of 0.000 < 0.05. The Adjusted R Square value of 0.244 indicated that the independent variables explained 24.4% of the variance in mindfulness, while the remaining 75.6% was influenced by other variables outside this study.

Kata kunci: Self-control, digital fatigue, mindfulness, gadget, pengguna smartphone

1. Introduction

The rapid development of digital technology has transformed patterns of social interaction, particularly among adolescents and young adults who consider smartphones an inseparable part of their daily lives. High-intensity gadget usage no longer functions solely as a communication tool but also as a medium for entertainment, learning, and social interaction that is difficult to separate from everyday activities. This phenomenon has placed individuals in a condition referred to as *permanent online and permanent connection*, characterized by continuous attachment to digital platforms and social media environments . Continuous digital engagement has increasingly become a source of psychological strain, resulting in emotional exhaustion and decreased attentional capacity among users [1].

Digital fatigue, often conceptualized as social media fatigue, refers to a condition of emotional and cognitive exhaustion resulting from excessive exposure to digital information and social media interactions. It is characterized by feelings of boredom, reduced concentration, psychological overload, and withdrawal tendencies from digital activities [2]. Empirical findings indicate that problematic smartphone use significantly predicts digital fatigue, suggesting that individuals who experience difficulties controlling smartphone engagement are more vulnerable to emotional exhaustion caused by digital overload [2] .Similarly, Yang et al. (2024) reported that excessive smartphone dependency contributes to psychological distress, academic burnout, and technological conflict, which collectively undermine individual well-being. These findings suggest that uncontrolled gadget use has implications not only for productivity but also broader mental health functioning.

Within psychological perspectives, self-control has been identified as a central factor influencing individuals' ability to regulate gadget-related behavior. Self-control enables individuals to inhibit impulsive responses, delay immediate gratification, and align behavior with long-term goals. In digital contexts, insufficient self-control often manifests in compulsive checking behavior, difficulty disengaging from smartphone use, and repeated failures to regulate social media consumption despite awareness of its negative consequences [3]. A longitudinal study conducted by [3] demonstrated that social media self-control failure was negatively associated with mindfulness and psychological well-being over time. These findings indicate that reduced

self-control may contribute to attentional fragmentation and increase susceptibility to digital fatigue.

Mindfulness has also emerged as an important psychological construct in understanding digital behavior regulation. Mindfulness refers to present-centered awareness accompanied by nonjudgmental attention toward ongoing experiences. Individuals with higher mindfulness tend to demonstrate stronger awareness of internal impulses, allowing them to regulate smartphone use more adaptively [4]. [4] found that problematic smartphone use was strongly associated with attentional impulsivity, while mindfulness significantly reduced maladaptive smartphone behavior through enhanced attentional control. Furthermore, [5] reported that mindfulness indirectly reduces problematic smartphone use through improved self-regulated learning and digital detox behavior. Likewise, [6] found that mindfulness moderates the adverse effects of self-regulatory fatigue on smartphone addiction, highlighting its protective role against digital overload.

Recent studies have also demonstrated the cognitive consequences of excessive gadget exposure. [7] reported that prolonged smartphone engagement contributes to fatigue and reduced task performance, while [8] found that acute smartphone use impairs vigilance and inhibitory control. These findings reinforce the argument that excessive digital engagement disrupts attentional processes and self-regulatory mechanisms, which are closely related to mindfulness functioning.

Although previous research has examined relationships among problematic smartphone use, mindfulness, and self-control, most studies focus on smartphone addiction, attentional impulsivity, or technological stress as separate constructs [4], [8]. Studies integrating self-control, digital fatigue, and mindfulness within a single explanatory framework remain limited, particularly among gadget users in developing digital societies. Furthermore, existing studies often position mindfulness as an intervention variable rather than examining its relationship with self-control and digital fatigue simultaneously.

Therefore, this study is conducted to address this empirical gap by examining the relationship between self-control and digital fatigue toward mindfulness among gadget users. This research offers novelty by integrating these three psychological constructs into a single relational model, providing a more comprehensive understanding of the psychological mechanisms underlying gadget-use behavior in contemporary digital contexts. The findings are expected to contribute to the growing field of digital psychology and provide empirical insights for developing psychological interventions aimed at promoting healthier digital engagement among adolescents and young adults.

2. Research Method

This study employed a quantitative approach using a correlational research design. The correlational method was selected because the study aimed to examine relationships and influences among variables without manipulating the research subjects.

2.1 Population and Sample

The population of this study consisted of adolescents and young adults aged 17–25 years who actively use smartphones and social media platforms. The sampling technique used was purposive sampling with the following criteria:

1. Respondents actively use smartphones every day.
2. Respondents use gadgets for at least four hours per day.
3. Respondents actively use social media platforms.

Based on these criteria, the study involved 101 respondents who met the sampling requirements.

2.2 Data Collection Technique

Data were collected online through questionnaires distributed using Google Forms. The research instruments consisted of three psychological scales measuring self-control, digital fatigue, and mindfulness.

Self-control was measured using an adapted version of the Self-Control Scale, which evaluates an individual's ability to regulate impulses and control gadget usage behavior. Digital fatigue was measured using the Social Media Fatigue Scale adapted from [9], while mindfulness was measured using the Mindfulness Attention Awareness Scale (MAAS), which has been widely used in studies related to attention regulation and smartphone usage behavior.

All questionnaire items used a five-point Likert scale consisting of:

Table 1 Likert Scale

Statement	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

2.3 Research Hypotheses

The hypotheses proposed in this study are as follows:

1. **H1:** Self-control significantly affects digital fatigue among gadget users.
2. **H2:** Technology usage habits significantly affect digital fatigue among gadget users.
3. **H3:** Self-control significantly affects mindfulness among gadget users.
4. **H4:** Technology usage habits significantly affect mindfulness among gadget users.
5. **H5:** Digital fatigue significantly affects mindfulness among gadget users.

2.4 Data Analysis Technique

Data analysis was conducted using SPSS software. Before hypothesis testing, the instruments were tested for validity and reliability. Validity testing used Pearson Product Moment correlation, while reliability testing employed Cronbach's Alpha with a minimum acceptable value of 0.70.

Furthermore, classical assumption tests including normality, multicollinearity, and heteroscedasticity tests were conducted to ensure that the regression model met statistical assumptions. Hypothesis testing was performed using multiple linear regression analysis and coefficient of determination analysis to identify the contribution of independent variables toward mindfulness among gadget users.

3. Results and Discussion

This study was conducted on 101 active gadget users consisting of adolescents and young adults aged 17–25 years. The respondents were selected based on purposive sampling criteria, including active smartphone use, a minimum gadget usage duration of four hours per day, and active engagement with social media platforms. Data collection was carried out online using Google Forms. The variables examined in this study included self-control, technology usage habits, digital fatigue, and mindfulness.

The collected data were analyzed using SPSS software through several statistical procedures, including validity testing, reliability testing, classical assumption testing, multiple linear regression analysis, and coefficient of determination analysis. The purpose of these analyses was to determine whether the proposed research model was statistically appropriate and to examine the influence of independent variables on the dependent variable.

3.1. Validity Test Results

The validity test was conducted to determine the ability of each questionnaire item to accurately measure the intended research variables. The validity analysis used Pearson Product Moment correlation with a total sample of 101 respondents. An item was considered valid if the significance value was below 0.05 and the correlation coefficient exceeded the r-table value.

Table 2 Validity Test Results

Variable	Kode	R tabel	R hitung	Ket
Pengendalian Diri	V1P1	0,195	0,410	Valid
	V1P2	0,195	0,423	Valid
	V1P3	0,195	0,641	Valid
	V1P4	0,195	0,657	Valid
	V1P5	0,195	0,664	Valid
	V1P6	0,195	0,711	Valid
	V1P7	0,195	0,544	Valid
	V1P8	0,195	0,671	Valid
Kebiasaan Penggunaan Teknologi	V2P1	0,195	0,699	Valid
	V2P2	0,195	0,728	Valid
	V2P3	0,195	0,778	Valid
	V2P4	0,195	0,730	Valid
	V2P5	0,195	0,752	Valid
	V2P6	0,195	0,589	Valid
	V2P7	0,195	0,816	Valid
	V2P8	0,195	0,612	Valid
	V2P9	0,195	0,670	Valid
	V2P10	0,195	0,617	Valid
Kelelahan Digital	YP1	0,195	0,310	Valid
	YP2	0,195	0,681	Valid
	YP3	0,195	0,843	Valid
	YP4	0,195	0,716	Valid
	YP5	0,195	0,773	Valid
	YP6	0,195	0,760	Valid
	YP7	0,195	0,766	Valid
	YP8	0,195	0,692	Valid
Kesadaran Penuh	ZP1	0,195	0,638	Valid
	ZP2	0,195	0,722	Valid
	ZP3	0,195	0,677	Valid
	ZP4	0,195	0,808	Valid
	ZP5	0,195	0,787	Valid
	ZP6	0,195	0,691	Valid
	ZP7	0,195	0,762	Valid
	ZP8	0,195	0,802	Valid

Based on the validity test results, all questionnaire items on the self-control, technology usage habits, digital fatigue, and mindfulness variables obtained significance values below 0.05. In addition, all correlation coefficient values were higher than the r-table value of 0.195. Therefore, all questionnaire items were declared valid and suitable for use as research instruments.

These findings indicate that each statement item was capable of representing the dimensions of the variables being measured. Consequently, the research instrument was considered appropriate for further statistical analysis.

3.2. Reliability Test Results

The reliability test was conducted to evaluate the consistency and stability of the research instruments. Reliability analysis used Cronbach's Alpha coefficient with a minimum acceptable reliability value of 0.70.

Table 3 Reliability Test Results

Variabel	Cronbach's Alpha	Keterangan
Variabel X1	0,887	Reliabel
Variabel X2	0,883	Reliabel
Variabel Y	0,884	Reliabel
Variabel Z	0,882	Reliabel

The results showed that all research variables obtained Cronbach's Alpha values greater than 0.70. The self-control variable obtained a Cronbach's Alpha value of 0.887, the technology usage habits variable obtained 0.883, the digital fatigue variable obtained 0.884, and the mindfulness variable obtained 0.882.

These results indicate that all instruments used in this study possessed good internal consistency and reliability. Therefore, the questionnaire items were considered reliable and appropriate for measuring the research variables consistently.

3.3. Normality Test Results

The normality test was performed using the One-Sample Kolmogorov-Smirnov Test on the regression residual values. The purpose of this test was to determine whether the research data were normally distributed, which is an important assumption in regression analysis. Data are considered normally distributed if the significance value exceeds 0.05.

Table 4 One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

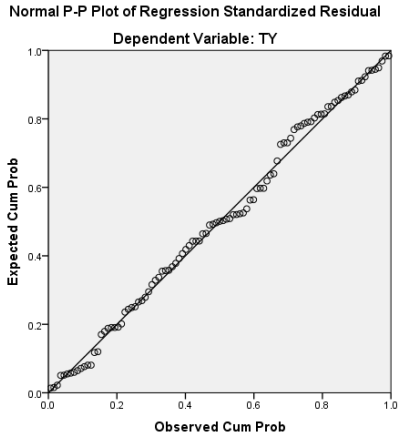
		Unstandardized Residual
N		101
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	5.09202906
Most Extreme Differences	Absolute	.058
	Positive	.050
	Negative	-.058
Kolmogorov-Smirnov Z		.584
Asymp. Sig. (2-tailed)		.885

a. Test distribution is Normal.

b. Calculated from data.

The test results showed a significance value of 0.885, which is greater than 0.05. Therefore, it can be concluded that the regression residuals were normally distributed and the regression model fulfilled the normality assumption.

Table 5 P-P Plot Regression



The normality assumption was also supported by the Normal P-P Plot graph, which showed that the residual points were distributed closely around the diagonal line and followed the direction of the line. This pattern indicates that the distribution of residual values was relatively normal and there were no serious deviations from normality.

Thus, the regression model used in this study was considered appropriate for further statistical analysis

3.4. Multicollinearity Test Results

The multicollinearity test was conducted to determine whether strong correlations existed among the independent variables in the regression model. Multicollinearity may interfere with regression analysis

because highly correlated independent variables can reduce the accuracy of coefficient estimation.

The multicollinearity test was analyzed using Tolerance and Variance Inflation Factor (VIF) values. A regression model is considered free from multicollinearity if the tolerance > 0.10 and the VIF value < 10.

Table 6 Multicollinearity Test Results

Variabel	Tolerance	VIF	Keterangan
Self-Control	> 0,10	< 10	Tidak terjadi multikolinearitas
Kebiasaan Penggunaan Teknologi	> 0,10	< 10	Tidak terjadi multikolinearitas
Digital Fatigue	> 0,10	< 10	Tidak terjadi multikolinearitas

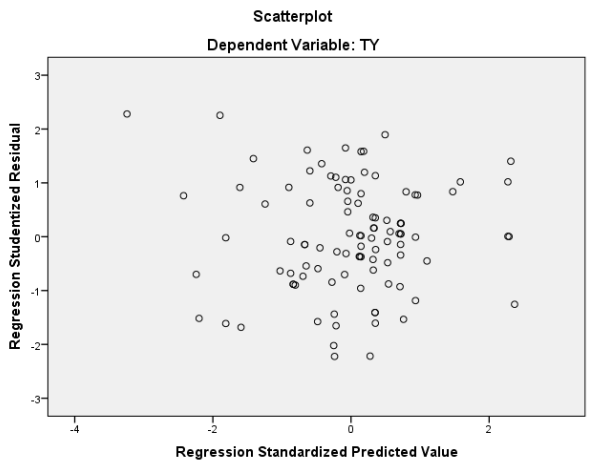
The results indicated that all independent variables had tolerance values > 0.10 and VIF values < 10. Therefore, it can be concluded that the regression model did not experience multicollinearity problems.

These findings indicate that each independent variable measured different aspects of the research model and did not show excessively high intercorrelations. Consequently, the regression coefficients generated in this study can be interpreted appropriately.

3.5. Heteroscedasticity Test Results

The heteroscedasticity test was conducted using scatterplot analysis between standardized residual values and predicted values. The purpose of this test was to determine whether unequal variance occurred in the residual values of the regression model.

Table 7 Scatterplot



The scatterplot results showed that the residual points were randomly distributed above and below zero on the Y-axis without forming a particular pattern. This random distribution indicates that heteroscedasticity was not present in the regression model.

Therefore, it can be concluded that the regression model fulfilled the heteroscedasticity assumption and was suitable for further hypothesis testing.

3.6. Multiple Linear Regression Analysis

a. Regression Model 1

The first multiple linear regression analysis was conducted to determine the influence of self-control and technology usage habits on digital fatigue among active gadget users.

Table 8 Coefficients Test Model 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	21.807	3.165		6.891	.000		
	X1	.287	.111	.275	2.582	.011	.834	1.199
	X2	-.006	.073	-.009	-.083	.934	.834	1.199

a. Dependent Variable: TY

The regression results showed that self-control significantly affected digital fatigue with a significance value of 0.011, which is lower than 0.05. This finding indicates that self-control plays an important role in influencing the level of digital fatigue experienced by individuals. Individuals with lower self-control tend to experience greater difficulty regulating gadget usage behavior, which may increase emotional and cognitive exhaustion caused by excessive digital exposure.

Meanwhile, technology usage habits did not significantly affect digital fatigue because the significance value obtained was 0.934, which is greater than 0.05. This finding suggests that the frequency or habitual use of technology alone was insufficient to explain the level of digital fatigue experienced by respondents. Other psychological factors may contribute more strongly to digital fatigue than technology usage habits themselves.

Table 9 Anova Test Model 1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	206.213	2	103.107	3.897	.024[b]
	Residual	2592.876	98	26.458		
	Total	2799.089	100			

a. Dependent Variable: Y

b. Predictors: (Constant), X2, X1

Furthermore, the simultaneous regression test showed a significance value of 0.024, which is lower than 0.05. This indicates that self-control and technology usage habits collectively had a significant effect on digital fatigue. Therefore, the regression model was considered statistically

appropriate for explaining digital fatigue among gadget users.

b. Regression Model 2

The second multiple linear regression analysis was conducted to determine the influence of self-control, technology usage habits, and digital fatigue on mindfulness among active gadget users. Mindfulness in this study refers to an individual's ability to maintain conscious awareness and attention toward present experiences while using digital technology.

Table 10 Coefficients Test Model 2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	14.177	3.173		4.468	.000		
	X1	.182	.094	.190	1.929	.057	.781	1.281
	X2	-.009	.060	-.014	-.147	.883	.834	1.199
	Y	.400	.083	.435	4.815	.000	.926	1.080

a. Dependent Variable: Z

The regression analysis revealed that digital fatigue significantly affected mindfulness with a significance value of 0.000, which is lower than 0.05. This finding indicates that digital fatigue has an important influence on an individual's level of mindfulness. Excessive exposure to digital environments may lead to emotional exhaustion, reduced concentration, and decreased psychological awareness, which subsequently affect mindfulness.

On the other hand, self-control did not significantly affect mindfulness because the significance value exceeded 0.05. Similarly, technology usage habits also did not significantly affect mindfulness. These findings indicate that self-control and technology usage habits were not directly associated with mindfulness in this study

Table 11 Anova Test Model 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	632.390	3	210.797	11.766	.000[b]
	Residual	1737.808	97	17.916		
	Total	2370.198	100			

a. Dependent Variable: Z

b. Predictors: (Constant), Y, X2, X1

However, the simultaneous regression test demonstrated that self-control, technology usage habits, and digital fatigue collectively had a significant effect on mindfulness, with a significance value of 0.000 < 0.05. This suggests that the combination of psychological and behavioral factors related to gadget usage contributes to mindfulness among individuals.

The findings of this study highlight the importance of maintaining balanced digital behavior and minimizing excessive digital exposure to preserve mindfulness and psychological well-being in daily life. Excessive gadget usage and unmanaged digital fatigue may reduce individuals' ability to maintain focus, emotional balance, and present-moment awareness.

3.7. Coefficient of Determination Results

Table 12 Coefficient of Determination Results

Variabel	**R Square**	**Adjusted R Square**
Digital Fatigue (Y)	0,074	0,055
Mindfulness (Z)	0,267	0,244

The coefficient of determination analysis was conducted to determine the contribution of the independent variables in explaining the dependent variables.

The Adjusted R Square value for the digital fatigue variable was 0.055. This indicates that self-control and technology usage habits explained 5.5% of the variance in digital fatigue, while the remaining 94.5% was influenced by other variables outside this study.

Meanwhile, the Adjusted R Square value for mindfulness was 0.244. This result indicates that self-control, technology usage habits, and digital fatigue explained 24.4% of the variance in mindfulness, while the remaining 75.6% was influenced by other external factors not examined in this study.

These findings suggest that although the independent variables significantly contributed to mindfulness, other psychological, social, and environmental factors may also play important roles in influencing mindfulness among gadget users.

4. Conclusion

Based on the results of this study conducted on 101 active gadget users, it can be concluded that self-control and digital fatigue are important factors associated with mindfulness among gadget users. The findings indicate that self-control has a significant effect on digital fatigue. This suggests that individuals who are able to regulate their behavior and control their gadget usage more effectively tend to experience lower levels of digital fatigue. Conversely, poor self-control may increase excessive smartphone usage, which can contribute to emotional and cognitive exhaustion caused by continuous digital exposure.

The study also found that technology usage habits did

not significantly affect digital fatigue. This result indicates that the frequency or habitual use of technology alone is not sufficient to explain the occurrence of digital fatigue among respondents. Other psychological and environmental factors may contribute more substantially to the development of digital fatigue.

Furthermore, the results of the second regression model demonstrated that digital fatigue significantly affects mindfulness. Higher levels of digital fatigue were associated with lower levels of mindfulness among gadget users. This finding implies that excessive digital exposure and psychological exhaustion may reduce an individual's ability to maintain awareness, concentration, and emotional balance in everyday life. Meanwhile, self-control and technology usage habits did not show a direct significant effect on mindfulness individually.

The simultaneous regression analysis revealed that self-control, technology usage habits, and digital fatigue collectively had a significant effect on mindfulness. In addition, the coefficient of determination analysis showed that these variables explained 24.4% of the variance in mindfulness, while the remaining 75.6% was influenced by other variables outside the scope of this study.

Overall, the findings suggest that uncontrolled gadget usage may increase digital fatigue, which subsequently affects an individual's mindfulness and psychological well-being. Therefore, improving self-control in digital technology usage is important in order to maintain focus, awareness, and mental balance in the digital era. These findings also provide practical implications for individuals, educators, and mental health practitioners regarding the importance of healthy digital behavior and psychological self-regulation in reducing the negative effects of excessive gadget use.

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