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Self-Control and Screen Time: Understanding Their Interplay in the Digital Age

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A B S T R A C T

This study examined the relationship between self-control and smartphone usage time among adolescents. A total of 400 participants aged 15–18 years were recruited using a random sampling method. Data were collected through a validated self-control scale and self-reported smartphone usage time. Binary logistic regression analysis showed that self-control significantly predicted smartphone usage duration, with a coefficient estimate of -0.0862 (SE = 0.0214, Z = -4.03, $p < 0.001$). The negative coefficient indicates that increased self-control reduces the likelihood of excessive smartphone use (>6 hours/day). Adolescents with higher self-control were less likely to engage in prolonged smartphone use, emphasizing the role of self-regulation in digital consumption. These findings highlight the need for interventions to enhance adolescent self-control.

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INTRODUCTION

In the rapidly evolving digital era, smartphones have become an inseparable part of daily life. Over the past decade, smartphones have evolved beyond communication tools, serving as sources of entertainment, education, and productivity (Drusian et al., 2022). According to Drusian et al. (2022), smartphones are defined as application- and service-based communication technologies that have undergone rapid development over the last 15 years, allowing users to access various types of information and interact online with high flexibility.

Despite their benefits, smartphone usage also poses challenges, particularly concerning social and psychological aspects. Previous studies indicate that excessive smartphone use can reduce direct social interactions, increase dependency, and negatively impact psychological well-being (Drusian et al., 2022). Smartphone dependency has been linked to decreased interpersonal communication skills, heightened social anxiety, and increased social isolation (Elhai et al., 2020).

In Indonesia, smartphone usage has increased annually. Data from Pusparisa (2020) show that smartphone users rose from 28.6% in 2015 to 63.3% in 2019 and are projected to reach 89.2% by 2025. Additionally, We Are Social and Hootsuite (2021) reported that as of January 2021, the number of smartphone users in Indonesia reached 345.3 million, exceeding the country's total population, indicating that many individuals own multiple devices.

A recent survey by the Indonesian Internet Service Providers Association (APJII) in 2023 found that smartphones are the primary device for internet access in Indonesia. Among adolescents aged 13–18, 99.51% used smartphones or tablets for internet access, significantly higher than the usage of computers or laptops, which was only 9.88%. The dominance of smartphone use among adolescents raises critical implications regarding its influence on behavioral patterns and self-control in managing screen time.

A study by Hashim et al. (2023) explored the prevalence of problematic smartphone use among Malaysian adolescents and its impact on psychological health. Their findings revealed that problematic smartphone use significantly contributed to psychological issues such as depression, anxiety, and stress, with a prevalence of 43.5% among surveyed students. The study showed that adolescents who engaged in excessive smartphone use, both in duration and frequency, were more vulnerable to psychological problems. Similarly, research by Mayangsari et al. (2024) emphasized that self-control plays a crucial role in adolescent development. Their study found that adolescents with low self-control tend to act impulsively and engage in risky behaviors due to their inability to consider long-term consequences. Conversely, adolescents with high self-control can regulate their impulses and emotions, enabling them to interact more positively and effectively in social situations.

In the context of smartphone use, low self-control makes it harder for adolescents to limit screen time, increases distractions, and heightens the risk of excessive or problematic smartphone use. Therefore, it is essential to examine the influence of self-control on smartphone usage duration. Other studies also

support the notion that self-control is significantly related to various risk behaviors (Ciurbea et al., 2022). Low self-control is a strong predictor of risky behaviors, such as substance use, aggression, juvenile delinquency, and risky sexual behavior. As a capacity to regulate behavior, emotions, and impulses, self-control helps individuals achieve long-term goals by resisting immediate gratification. Among adolescents, low self-control can lead to difficulties in self-restraint and rational decision-making, increasing their susceptibility to behaviors that may harm their health and well-being.

Self-control plays a critical role in managing individual behavior. It is defined as the ability to suppress impulses, regulate emotions, and direct behavior toward long-term goals (De Ridder et al., 2012). This ability functions as an internal mechanism that enables individuals to control impulsive tendencies, particularly in smartphone usage. Failure to regulate impulses and resist smartphone use leads to problematic smartphone use. Adolescents who struggle to control their smartphone-related urges are more vulnerable to problematic smartphone use (Zhao et al., 2024).

This study aims to understand the relationship between self-control and smartphone usage duration, considering that self-control is a crucial factor in regulating individual behavior toward digital technology (Duckworth et al., 2019). By exploring how self-control influences smartphone screen time, this research seeks to provide deeper insights into strategies for promoting healthy smartphone use in the digital era

LITERATURE REVIEW

Self-control

Self-control is the capacity of individuals to modify or regulate dominant response tendencies and manage their behavior, thoughts, and emotions to achieve long-term goals (de Ridder et al., 2012). This concept consists of two dimensions: inhibitory self-control, which refers to the ability to suppress impulses and avoid undesirable behaviors, and initiatory self-control, which involves initiating and sustaining goal-directed behaviors (de Ridder et al., 2011).

Individuals with high self-control are better at managing emotions, delaying gratification, and staying focused on long-term objectives. In contrast, those with low self-control tend to be more impulsive and prone to maladaptive behaviors (de Ridder et al., 2011). Self-control plays a crucial role in various aspects of life, such as health, academics, and social relationships. Therefore, this concept provides a comprehensive framework for understanding how individuals regulate their behavior to achieve positive outcomes.

Smartphone Usage Duration Theory

The duration of smartphone usage in this study is categorized into two groups: ≤6 hours and >6 hours. This classification follows Elhai et al. (2017), who highlighted the negative impacts of problematic smartphone use, particularly when usage exceeds what is considered normal. Their study found that excessive smartphone usage, especially beyond 6 hours per day, is strongly associated with increased symptoms of anxiety, depression, and stress, ultimately contributing to problematic smartphone use. This framework helps in understanding how

excessive smartphone use can lead to psychological distress and behavioral issues.

Empirical Literature Review

Several empirical studies have explored the relationship between self-control and problematic smartphone use among adolescents. Research by Hashim et al. (2023) found that problematic smartphone use significantly contributed to psychological issues such as depression, anxiety, and stress among Malaysian adolescents. Their study indicated that excessive smartphone use is associated with increased vulnerability to psychological distress. Similarly, Mayangsari et al. (2024) highlighted the critical role of self-control in adolescent development, showing that adolescents with low self-control tend to engage in impulsive behaviors, including excessive smartphone use, due to difficulties in regulating their impulses. This aligns with findings from Ciurbea et al. (2022), which suggest that low self-control is a strong predictor of various risk behaviors, such as substance use, aggression, and digital addiction.

In the context of smartphone usage, Zhao et al. (2024) emphasized that adolescents with low self-control struggle to regulate their screen time, leading to higher susceptibility to problematic smartphone use. De Ridder et al. (2012) also support this argument, stating that self-control functions as an internal mechanism that helps individuals resist impulsive tendencies and maintain goal-directed behavior. Elhai et al. (2017) further found that individuals who use smartphones for more than six hours a day experience negative psychological effects, reinforcing the importance of self-control in managing screen time.

Individuals with high self-control tend to have a lower duration of smartphone use. Therefore, this study hypothesizes that there is a significant negative relationship between self-control and smartphone usage duration**.** In other words, when self-control is high, the duration of smartphone use will be lower, and conversely, when self-control is low, the duration of smartphone use will be higher.

METHODOLOGY

This study targeted adolescents aged 15-19 in Medan City. The total population in this age group is 190,263, consisting of 97,998 males and 92,265 females, based on data from the Central Bureau of Statistics of Medan (2022). The sample size was determined using Yamane's (1973) formula with a 5% margin of error, resulting in a sample of 400 participants. The sampling technique used was cluster random sampling, where five districts were randomly selected from the 21 districts in Medan city. From each selected district, one school was chosen, and the sample distribution was proportionally determined based on student enrollment data taken from the Ministry of Education (2024).

The study employed the Brief Self-Control Scale (BSCS) Indonesian version, adapted by Arifin and Milla (2020), based on De Ridder et al.'s (2012) self-control theory. The scale consists of 10 items divided into two dimensions: inhibition (six items) and initiation (four items). Higher scores indicate higher self-control levels. The reliability analysis showed a Cronbach's α of 0.688, suggesting acceptable internal consistency.

In addition, smartphone usage duration was measured via a self-reported survey via Google Forms, where participants reported their average daily screen time. Based on their responses, they were categorized into two groups: those who using smartphones for less than six hours per day and those exceeding six hours. This categorization aimed to measure different levels of smartphone use.

RESULT AND DISCUSSION

Descriptive Statistics

This study presents a detailed description of the gender distribution and smartphone usage duration (screen time) among 400 adolescents who participated in the study.

Table 1. Distribution of Research Subjects by Gender

Gender	Count (N)	Percentage (%)
Male	187	47%
Female	213	53%
Total	**400**	**100%**

Data presented in Table 1, out of a total of 400 adolescent research subjects, 187 (47%) were male, while 213 (53%) were female. These results indicate that there were more female than male participants in this study.

Table 2. Distribution of Research Subjects by Smartphone Usage Duration

Smartphone Usage Duration	Count (N)	Percentage (%)
≤ 6 hours	183	45.75%
>6 hours	217	54.25%
Total	**400**	**100%**

As shown in Table 2, the distribution of smartphone usage duration among the research subjects is divided into two groups: ≤6 hours and >6 hours. This categorization refers to a study by Elhai et al. (2017), which discusses the negative impacts of problematic smartphone use, especially when usage exceeds what is considered normal. Elhai and colleagues found that excessive smartphone use, particularly more than six hours per day, is strongly associated with increased symptoms of anxiety, depression, and stress, which contribute to problematic smartphone use. Among the 400 adolescents in this study, 183 (45.75%) used smartphones for less than six hours per day, while the remaining 217 (54.25%) used them for more than six hours per day.

This section explains the categorization of self-control among adolescents in this study, based on a predefined classification norm. The categorization of self-control is detailed in Table 3 as follows:

Table 3. Categorization of Self-Control Data

Rentang Nilai	Kategorisasi	Frekuensi	%
X ≥ 30	Tinggi	292	73%
X < 30	Rendah	108	27%
Total		**400**	**100%**

Based on Table 3, regarding the research findings, the categorization of self-control data shows that the majority of respondents (73%) have a high level of self-control. This indicates that most adolescents in this study are able to regulate themselves effectively. However, there is also a group of respondents categorized as having low self-control (27%), highlighting the presence of individuals who may require greater attention in terms of self-regulation.

According to the self-control theory by de Ridder et al. (2011), high self-control is associated with the ability to delay gratification, resist temptations, and achieve long-term goals. The findings of this study indicate that the majority of adolescent respondents possess a high level of self-control (73%). This suggests that most adolescents in the study are capable of managing their thoughts, emotions, and behaviors effectively. They tend to engage in goal-directed behaviors and avoid actions that may be detrimental.

High self-control is also linked to achievements in other aspects of life, such as health, academic performance, and social relationships, as suggested by de Ridder et al. (2011). Adolescents with high self-control may be better at managing their smartphone usage time, preventing impulsive behaviors or excessive use that could negatively impact their academic performance or well-being.

The ability to exert self-control is also closely related to cognitive development. According to a study by Yoon and Yun (2023), adolescents with high self-control tend to have better cognitive abilities, particularly in time management and focus on academic tasks. These individuals are more capable of recognizing when to restrain their urges to use smartphones excessively, demonstrating greater metacognitive awareness.

According to Piaget (as cited in Papalia & Martorell, 2021), adolescents have reached the formal operational stage, which represents the highest level of cognitive development. At this stage, they develop hypothetico-deductive reasoning, allowing them to think abstractly and logically. This process involves hypothesis development, hypothesis testing, and conclusion drawing. Such cognitive abilities are crucial for decision-making and problem-solving at a more mature level. In the context of self-control, these abilities help adolescents evaluate various possibilities and consider the consequences of their actions before making decisions.

When an adolescent is capable of hypothetico-deductive thinking, they can predict the outcomes of different actions and weigh their choices for the long term (Papalia & Martorell, 2021). This aligns with the concept of self-control by de Ridder et al. (2011), which states that individuals with high self-control can restrain impulses, resist temptations, and delay gratification in pursuit of long-term goals. With abstract thinking abilities, adolescents do not merely focus on immediate pleasure but also consider long-term consequences that may lead to more positive outcomes.

Overall, high self-control in adolescents contributes to their overall well-being and helps them navigate challenges during the transition to adulthood. According to a study by Kim et al. (2022), adolescents with high self-control tend to experience fewer mental health problems. This suggests that they are better at

managing their emotions and behaviors, reducing the risk of mental health disorders such as anxiety and depression. Additionally, self-control is associated with better family functioning. Adolescents who can regulate themselves are more likely to engage in positive interactions, strengthening family relationships and supporting their mental well-being. Furthermore, good self-control is linked to various positive outcomes in the future, including better physical and mental health, higher educational attainment, greater career opportunities, and financial security (Kim et al., 2022).

However, this study also found that 27% of respondents exhibited low self-control, indicating a group that is more vulnerable to temptations and struggles with impulse management. According to de Ridder et al. (2011), individuals with low self-control often engage in maladaptive behaviors that can disrupt their life balance and lead to suboptimal outcomes in various life domains.

Hypothesis Testing

In this section, hypothesis testing is conducted on the variables self-control and smartphone usage duration. However, before proceeding with the hypothesis test, a model fit test is performed first, as follows:

Table 4. Model Fit Test Table

Model Fit Measures						
				Overall Model Test		
Model	Deviance	AIC	R^2_{McF}	χ^2	df	P
1	534	538	0.0315	17.4	1	< .001

Based on Table 4. presents the results of the model fit test in logistic regression analysis. This test aims to evaluate how well the model explains the relationship between self-control and smartphone usage duration. A deviance value of 534 indicates the degree of model misfit with the data, where a lower deviance value suggests a better model fit. Additionally, the Akaike Information Criterion (AIC) value of 538 is used to compare different models, with a lower value indicating a more efficient model in balancing complexity and data fit.

The pseudo-R^2 McFadden value (R^2_{McF}) of 0.0315 suggests that self-control explains only about 3.15% of the variability in smartphone usage duration, indicating that other factors also influence the dependent variable. The chi-square test (χ^2) value of 17.4 with one degree of freedom (df = 1) shows that the overall model is significantly better than a model without predictors, with a p-value of < 0.001, indicating statistical significance. In other words, self-control has a significant relationship with smartphone usage duration, although its contribution is relatively small.

Table 5. Self-Control and Smartphone Usage Duration Relationship Test

Model Coefficients – Durasi							
						95% Confidence Interval	
Predictor	**Estimate**	**SE**	**Z**	**P**	**Odds ratio**	**Lower**	**Upper**
Intercept	2.9956	.7100	4.22	< .001	19.998	4.974	80.408
SC	-0.0862	.0214	-4.03	< .001	0.917	0.880	0.957
Note. Estimates represent the log odds of "Durasi >6 jam = 2" vs. "Durasi ≤6 jam = 1"							

The results of the binary logistic regression analysis indicate that self-control (SC) has a significant influence on smartphone usage duration, with an estimated coefficient of -0.0862 (SE = 0.0214, Z = -4.03, $p < 0.001$). The very small p-value (< 0.001) confirms the statistical significance of this relationship. The negative coefficient suggests that higher self-control is associated with a lower likelihood of adolescents using smartphones for more than six hours per day (Category 2) compared to those using them for less than six hours per day (Category 1). In other words, the higher an individual's self-control, the lower their probability of excessive smartphone use.

The odds ratio of 0.917 (95% CI: 0.880 – 0.957) indicates that each one-unit increase in self-control is associated with an approximately 8.3% (1 - 0.917) decrease in the likelihood of using a smartphone for more than six hours per day. The confidence interval, which does not include the value of 1 (0.880 – 0.957), suggests that these findings are robust and unlikely to be due to chance. Meanwhile, the intercept value of 2.9956 represents the baseline probability of adolescents being in the high smartphone usage category, which is quite high, with an odds ratio of 19.998.

Overall, these findings support the idea that self-control plays a role in regulating smartphone usage duration, as individuals with higher self-control are more capable of limiting their screen time. However, the study also found that self-control only explains about 3.15% of the variability in smartphone usage duration, indicating that other factors contribute to adolescents' smartphone usage patterns.

Despite its relatively small contribution, the significant relationship between self-control and smartphone usage duration remains relevant in understanding how self-regulation influences adolescents' digital habits. As highlighted by Kim et al. (2022), adolescents with high self-control tend to have better mental well-being and a lower risk of psychological disorders. Therefore, enhancing self-control may serve as a potential strategy for reducing excessive smartphone use.

However, these findings also suggest that factors beyond self-control must be considered when examining smartphone usage patterns among adolescents. Environmental influences, social pressures, and ease of access to technology are likely to play a role in determining usage duration. Further research is needed to explore additional factors that may contribute to adolescent digital behavior.

A study by Liu et al. (2023) found that individuals with low self-control often struggle to limit their screen time, even when they are aware of the negative consequences of excessive smartphone use. These individuals tend to use smartphones as a coping mechanism for negative emotions or stress arising from neuroticism. The study also revealed that self-control acts as a mediator in the relationship between neuroticism and problematic smartphone use. This means that individuals with high levels of neuroticism tend to have lower self-control, making them more susceptible to excessive smartphone use. In other words, high neuroticism leads to lower self-control, which in turn increases the likelihood of problematic smartphone use (Liu et al., 2023).

The implications of this study highlight the importance of interventions aimed at improving self-control in adolescents. Educational programs on time management, impulse control training, and awareness of the negative impacts of excessive smartphone use may help adolescents develop healthier digital habits. Additionally, parental and social support can serve as protective factors in reducing the risk of problematic smartphone use.

In conclusion, this study confirms that self-control plays a role in determining smartphone usage duration among adolescents, although its effect is relatively small. Therefore, a more comprehensive approach is needed to understand and manage excessive smartphone use, considering broader psychological, social, and environmental factors.

The findings of this study indicate that self-control is associated with the duration of smartphone use among adolescents. Theoretically, self-control refers to an individual's ability to regulate thoughts, emotions, and behaviors in order to achieve long-term goals and avoid impulsivity (de Ridder et al., 2012). In the context of smartphone use, individuals with higher self-control are more likely to set boundaries on their screen time and avoid excessive or unproductive smartphone usage.

This finding aligns with previous studies highlighting the role of self-control in regulating digital technology use. For instance, a study by Gao et al. (2024) found that lower self-control increases the risk of problematic smartphone use among adolescents. Individuals with poor self-control tend to be more susceptible to strong urges to use their smartphones excessively, which can ultimately lead to problematic usage patterns. Furthermore, other research suggests that lower self-control is linked to a greater frequency and duration of smartphone use, which can have negative consequences such as decreased sleep quality and reduced productivity (Kim et al., 2016).

Additionally, a study by Kim and Oh (2016) explored the relationship between smartphone usage habits and self-control, demonstrating its significant impact on social development. Their findings indicated that children with higher self-control levels tend to have better social interactions. This suggests that

individuals who can effectively manage their emotions and behaviors are more likely to engage in positive social interactions. The study also emphasized the crucial role of parents, particularly mothers as primary caregivers, in shaping appropriate smartphone usage habits, which in turn influence a child's social development.

Another study by Safaria et al. (2024) examined the relationship between nomophobia—the excessive fear of losing access to a smartphone—and variables such as emotion regulation, self-control, spiritual meaning, and loneliness. The study also explored how smartphone use acts as a mediator in these relationships. Their findings suggest that interventions aimed at improving emotional regulation, self-control, and spiritual well-being could help mitigate the risks of nomophobia. The study further emphasizes the importance of educating individuals on mindful smartphone use as part of a broader strategy to promote healthier digital habits.

From a practical standpoint, the relationship between self-control and smartphone usage duration suggests that interventions designed to enhance self-control could be effective in reducing excessive smartphone use among adolescents. Strategies such as self-regulation training, time management reminders, and reinforcing healthy smartphone habits can serve as practical approaches to help individuals better manage their smartphone usage. By fostering self-discipline and awareness, these interventions can contribute to a more balanced and mindful approach to technology use, ultimately supporting adolescent well-being.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, it can be concluded that self-control plays a crucial role in determining the duration of smartphone use among adolescents. Adolescents with higher self-control are better able to regulate their screen time, whereas those with lower self-control tend to use smartphones for longer periods. This reinforces the idea that strengthening self-control can be an effective strategy to help adolescents manage their smartphone use in a healthier manner.

Based on these findings, it is recommended that interventions focusing on enhancing self-control be developed to assist adolescents in regulating their smartphone usage. Educational programs that teach time management techniques, impulse control strategies, and awareness of the negative effects of excessive smartphone use can be implemented in both school and family settings. Additionally, parents and educators can play an active role in guiding adolescents to establish healthier smartphone usage boundaries, such as setting designated screen time periods and encouraging alternative, more beneficial activities.

Furthermore, policies that promote responsible technology use should be considered, such as enforcing smartphone usage regulations in schools or providing screen-time monitoring applications to help adolescents track and manage their habits. Through a holistic approach, adolescents are expected to use

technology more wisely without compromising other aspects of their lives, such as academics, mental health, and social interactions.

FURTHER STUDY

This study has several limitations that should be considered for future research. One major limitation is the reliance on self-report measures for assessing self-control and smartphone usage duration. While self-reporting is a common method in psychological research, it is subject to potential biases as participants may not always provide accurate accounts of their behavior. Therefore, future studies could consider using more objective methods, such as digital monitoring or applications that automatically track smartphone usage duration, to enhance data validity.

Additionally, this study has not explored other factors that may moderate the relationship between self-control and smartphone usage duration, such as emotional regulation, social pressure, or environmental conditions. Future research could examine how these factors contribute to shaping adolescents' smartphone usage patterns. Experimental studies testing the effectiveness of self-control-based interventions in reducing smartphone use could also be conducted to determine the extent to which self-control improvement strategies can help adolescents regulate their technology use.

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REFERENCES

Arifin, H., Milla, M. (2020). Adaptasi dan properti psikometrik skala kontrol diri ringkas versi Indonesia. *Jurnal Psikologi Sosial*, *18*(2), 179-195. Doi: 10.7454/jps.2020.18.

Asosiasi Penyelenggara Jasa Internet Indonesia (APJII). (2023). *Profil pengguna internet indonesia.* Asosiasi Penyelengara Jasa Internet Indonesia (APJII).

Ciurbea, F., Leban, U., Rada, C. (2022). Out of control: teenagers, self-control, and risky behaviors. *Anthropological Researches and Studies*, 12, 30-63.

De Ridder, D., Boer, B., Lugtig, P., Bakker, A., Hooft, E. (2011). Not doing bad things is not equivalent to doing the right thing: distinguishing between inhibitory and initiatory self-control. *Personality and Individual Differences* 50, 1006-1011. doi:10.1016/j.paid.2011.01.015.

De Ridder, D., Mulders, G., Finkenauer, C., Stok, F., Baumeister, R. (2012). Taking stock of self-control: a meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review 16*(1), 76–99.

Drusian, M., Magaudda, P., & Scarcelli, C. (2022). *Young people and the smartphone, everyday life on the small screen*. Switzerland: Company Springer Nature.

Duckworth, A. L., Taxer, J. L., & Eskreis-Winkler, L. (2019). "Self-Control and Academic Achievement." *Annual Review of Psychology, 70*, 373-399.https://doi.org/10.1146/annurev-psych-010418- 103230

Elhai, J., Hall, B., Levine, J., & Robert D. Dvorak. (2017). Types of smartphone usage and relations with problematic smartphone behaviors: The role of content consumption vs. social smartphone use. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *11*(2), 1-10.

Elhai, J., Yang, H., Fang, J., Bai, X., & Hall, B. (2020). Depression and anxiety symptoms are related to problematic smartphone use severity in Chinese young adults: Fear of missing out as a mediator. *Journal of Addictive Behaviors,* 1-7.

Gao, L., Zhao, W., Caselli, G., Zhang, Y., Wang, X., Zhang, Y., Chen, H. (2024). Weak and interfered self-control fails to block problematic mobile phone use: The role of craving and desire thinking. *Journal of Psychiatric Research 179*, 191-198.

Hashim, H., Tohid, H., Jamil, T., Jaafar, N., Shah, S. (2023). Problematic Smartphone Use and Its Impact on the Psychology of Adolescents in Malaysia. Pertanika J. Soc. Sci. & Hum. 31 (2), 505 – 526.

Kim, J. H., & Oh, S. J. (2016). The effect of children's smartphone usage habits and self-control on children's sociality. The Journal of Early Childhood Education Research, 36(4), 67-91. DOI : 10.18023/kjece.2016.36.4.004

Kim, Y., Richards, J., Oldehinkel, A. (2022). Self-control, mental health problems, and family functioning in adolescence and young adulthood: between-person differences and within-person effects. *Journal of Youth and Adolescence, 51,* 1181-1195.

Liu, Y., Wang, X., Zhai, J., Luo, F., & Xin, T. (2023). The effect of neuroticism on problematic smartphone use: A mediation model of self-control for males and females. Cyberpsychology: *Journal of Psychosocial Research on Cyberspace, 17*(1).

Mayangsari, A. M., Sugiharto, D. Y. P., & Mulawarman. (2024). Self-control in adolescents: A systematic literature review on behaviors and psychological intervention strategies. *JUANG: Jurnal Wahana Konseling*, 7(2), 230-245.

Papalia, D., & Feldman, R. (2021). *Experience human development menyelami perkembangan manusia edisi 12*. Jakarta: Salemba Humanika.

Papalia, D., & Martorell, G. (2021*). Experience human development 14th edition*. New York: McGraw-Hill Education.

Pusparisa, Y. (2020). Pengguna Smartphone diperkirakan Mencapai 89% Populasi pada 2025.

Safaria, T., Saputra, N. E., & Arini, D. P. (2024). The impact of nomophobia: Exploring the interplay between loneliness, smartphone usage, self-control, emotion regulation, and spiritual meaningfulness in an Indonesian context. *Journal of Technology in Behavioral Science*, 4(4), 45-64.

Santrock, J. (2019). *Adolescence 17th edition*. New York: McGraw-Hill Education.

We Are Social dan Hootsuite. (2021). *Digital 2021-Indonesia.*

Yamane, Taro. (1973). 3nd Edition, New York: Harper and Row.

Yoon, M., & Yun, H. (2023) Relationship between adolescent smartphone usage patterns, achievement goals, and academic achievement. *Asia Pacific Education Review 24,* 13–23.