

# The Association Between Social Media Use and Adolescent Behavior: A Study at Muhammadiyah 2 Sidoarjo High School

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## ABSTRACT

This study investigates the association between social media use and adolescent behavior among students at Muhammadiyah 2 Sidoarjo High School, East Java, Indonesia, addressing the limited empirical evidence from faith-based secondary education within urban, peripheral contexts. The research seeks to identify patterns of adolescents' social media engagement and to examine how variations in usage intensity correspond to behavioral tendencies. A quantitative correlational design was applied, utilizing primary data obtained through an online questionnaire administered to 123 active students from grades X and XI. Descriptive statistics and simple linear regression were employed to evaluate the strength and direction of the relationship between variables. The findings demonstrate a positive and statistically significant directional association ( $B = 0.255$ ,  $p < 0.05$ ) between social media use and adolescent behavior, indicating behavioral amplification rather than normative improvement, whereby increased engagement corresponds to more pronounced expressions of both constructive and maladaptive behaviors. Nevertheless, the model's explanatory power remains modest (Adjusted  $R^2 = 12.4\%$ ), suggesting that adolescent behavior is predominantly

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shaped by additional contextual factors, including family environment, religiosity, and peer dynamics. Overall, the results underscore the dual role of social media as a medium for educational engagement and a potential source of behavioral risk, reinforcing the need for structured digital literacy initiatives and guided supervision to foster adaptive online practices among adolescents.

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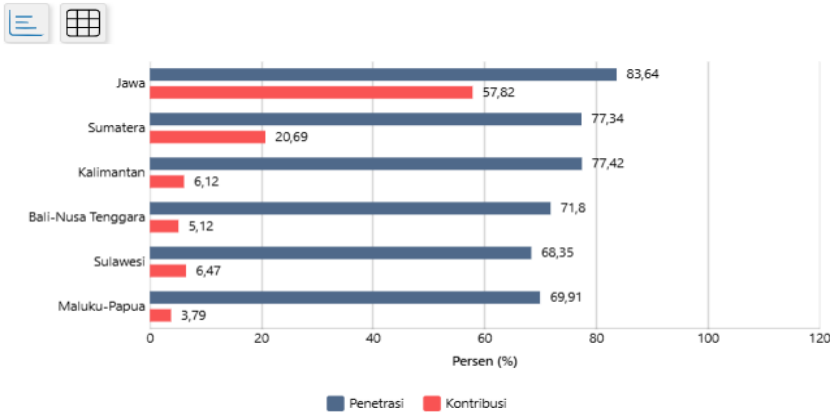
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## 1. INTRODUCTION

In the contemporary digital era, social media has evolved into an integral component of daily life, particularly among adolescents. The rapid expansion of digital platforms has profoundly reshaped communication patterns, learning behaviors, and social interactions during this critical developmental stage. Adolescence represents a neurodevelopmental period marked by heightened sensitivity to social feedback, identity exploration, and reward-seeking behavior, rendering teenagers especially susceptible to the influence of digital environments.

Tingkat Penetrasi dan Kontribusi Internet Indonesia Berdasarkan Pulau (2024)

databoks



**Figure 1.** Internet Penetration Rate in Indonesia

From a neuropsychological perspective, adolescent brain development, particularly the ongoing maturation of the prefrontal cortex, renders self-regulation, impulse control, and executive functioning more vulnerable to excessive digital stimulation. Social media platforms, through algorithm-driven content and intermittent reinforcement mechanisms (e.g., likes, notifications), may intensify reward sensitivity and prolong engagement, thereby influencing behavioral regulation and emotional responses.

This phenomenon is closely linked to the rapid growth of internet access in Indonesia. According to national statistics, Indonesia recorded an internet penetration rate of approximately 79.5% in early 2024, with Java Island contributing the largest proportion of users. This high penetration rate indicates that internet access is widely available and increasingly normalized among Indonesian adolescents, particularly in urban and semi-urban regions such as East Java [1]. Empirical data further reveal that 84.37% of Indonesians aged 16–30 years actively use the internet to access social media platforms, confirming that social media has become one of the primary digital activities among youth populations.

The pervasive use of social media presents a dual-edged reality. On one hand, digital platforms facilitate communication, access to information, creativity, and community-building. On the other hand, excessive or unregulated use has been associated with adverse outcomes, including cyberbullying, internet addiction, social withdrawal, academic disengagement, and heightened anxiety [2]. These contrasting outcomes highlight the need for a more nuanced and theoretically grounded examination of adolescent social media use.

In order to ensure conceptual precision, this study defines its two principal constructs with clarity. Social media use refers to the intensity and frequency with which adolescents engage with platforms such as TikTok, Instagram, and YouTube, encompassing activities including interpersonal communication, content creation, and passive content consumption. Adolescent behavior, in contrast, is conceptualized as observable and measurable patterns of conduct related to academic discipline, moral attitudes, interpersonal relationships, emotional regulation, and psychological well-being.

These definitions are essential to avoid conceptual ambiguity and to establish a rigorous empirical foundation.

National mental health data further underscore the urgency of this issue. The Indonesian National Adolescent Mental Health Survey (I-NAMHS) reports that approximately one in three adolescents aged 10–17 years experience mental health-related difficulties, while one in twenty meets diagnostic criteria for a mental disorder within a twelve-month period, based on DSM-5 guidelines [3]. Complementary evidence from *Our World in Data* indicates gender disparities in mental health prevalence, with Indonesian female adolescents exhibiting higher vulnerability to anxiety and depressive disorders. These findings suggest that adolescent psychological well-being is a growing public health concern that may intersect with patterns of digital media use.

Previous empirical studies have documented diverse impacts of social media on adolescent behavior. Research conducted in Napallicin Village demonstrated that social media exposure contributed to moral challenges, reduced face-to-face social interaction, and increased exposure to inappropriate content [4][5]. Subsequent studies have emphasized the prominent role of TikTok in shaping adolescent behavior in Indonesia, particularly during the COVID-19 pandemic when digital engagement intensified [6]. During this period, adolescents increasingly relied on social media to explore trends, construct identities, and maintain peer connections amid physical restrictions.

Mulyono [7] further identified that excessive social media use among Indonesian adolescents is associated with addiction symptoms, diminished academic focus, and neglect of daily responsibilities. Large-scale studies have also reported high prevalence rates of social media addiction, with 42.1% of adolescents experiencing moderate addiction and 15.8% experiencing severe addiction [10]. Additional studies have examined behavioral and psychological outcomes related to social media use, including emotional instability, reduced self-control, and interpersonal difficulties [11–18].

Despite the growing body of literature, many existing studies remain largely descriptive and fragmented. While some emphasize negative outcomes such as addiction and academic decline, others underscore the positive potential of social media in fostering

creativity, self-expression, and digital literacy. However, limited effort has been made to synthesize these findings within a coherent theoretical framework.

This study addresses this limitation by integrating Uses and Gratifications Theory, which conceptualizes adolescents as active users who engage with social media to fulfill psychological and social needs, and Social Cognitive Theory (Bandura), which explains how observed online behaviors are internalized and reproduced through modeling processes. These frameworks enable a deeper understanding of how social media intensity translates into behavioral outcomes rather than merely documenting correlational patterns.

Moreover, significant research gaps persist. Existing studies rarely explore how different social media platforms collectively influence adolescent behavior beyond single-platform analyses. Long-term developmental implications also remain underexamined, as most studies rely on cross-sectional designs. Furthermore, limited attention has been given to the role of institutional and socio-cultural contexts, particularly faith-based educational environments, in shaping adolescents' digital engagement.

Notably, few studies in Indonesia have investigated adolescent social media behavior within schools that emphasize religious values and moral education, despite the potential moderating role such environments may play in digital behavior regulation. This omission limits our understanding of how cultural and institutional factors interact with pervasive digital exposure.

In synthesizing prior findings, it becomes evident that Indonesian adolescents encounter a complex digital landscape characterized by both developmental opportunities and psychological risks. What remains insufficiently explored is how these dynamics manifest within different demographic and institutional contexts, particularly in faith-based private schools where normative values and disciplinary structures coexist with high levels of digital accessibility.

This study was conducted at SMA Muhammadiyah 2 Sidoarjo, a private Islamic senior high school located in East Java. The selection of this site is theoretically and contextually significant. Sidoarjo functions as a metropolitan satellite (buffer) city

supporting Surabaya, characterized by high digital penetration and urban mobility while maintaining strong communal and religious traditions.

SMA Muhammadiyah 2 Sidoarjo represents an academically competitive and value-oriented institution where structured moral education intersects with intensive exposure to metropolitan digital culture. This unique context provides an ideal setting to examine how adolescent behavior is shaped by social media use within a regulated religious environment, offering insights that extend beyond purely urban or rural settings.

Accordingly, this study aims to examine the association between social media use and adolescent behavior at SMA Muhammadiyah 2 Sidoarjo, while also describing patterns of social media engagement among students within this specific socio-cultural and institutional framework.

## **2. METHOD**

This study was conducted at SMA Muhammadiyah 2 Sidoarjo, a private Islamic senior high school located in Sidoarjo Regency, East Java, Indonesia. The school is situated within a metropolitan satellite (buffer city) context that supports the urban center of Surabaya. This geographic and socio-demographic positioning is critical, as adolescents in satellite cities experience high levels of digital exposure comparable to metropolitan areas while remaining embedded in communities that emphasize religious values, social cohesion, and structured moral education.

A quantitative research approach with a correlational descriptive design was employed. This design was selected to achieve two primary objectives: first, to describe patterns and levels of social media use and adolescent behavior; and second, to statistically examine the association between these variables through inferential analysis. The correlational framework aligns with neuropsychological research traditions that seek to identify behavioral patterns linked to digital exposure without manipulating developmental variables that may raise ethical concerns in adolescent populations.

### ***2.1 Data Sources and Research Instruments***

This study utilized both primary and secondary data sources. Primary data were collected through a structured self-report

questionnaire distributed via Google Forms. The online format was chosen to enhance accessibility, ensure respondent anonymity, and reduce social desirability bias, particularly when assessing sensitive behavioral indicators. Secondary data were obtained from institutional school records and relevant academic literature on adolescent behavior and digital media use.

To enrich contextual understanding, semi-structured interviews were conducted with the school principal and Guidance and Counseling (BK) teachers. These interviews focused on school regulations regarding digital media use, observed behavioral trends among students, and institutional strategies for managing technology-related challenges. Importantly, these qualitative insights were used solely to support the interpretation of quantitative findings and were not subjected to statistical analysis, ensuring methodological consistency with the study’s quantitative orientation.

**2.2 Population and Sample**

Population refers to a defined group of individuals possessing specific characteristics from which research conclusions may be drawn (Kuncoro, 2013). The population of this study comprised all students actively enrolled in grades X and XI at SMA Muhammadiyah 2 Sidoarjo during the 2023/2024 even semester.

| Table 1. Research Population |      |        |       |
|------------------------------|------|--------|-------|
| Class                        | Male | Female | Total |
| X                            | 181  | 165    | 346   |
| XI                           | 188  | 195    | 383   |
| Total                        | 369  | 360    | 729   |

Source: SMA Muhammadiyah 2 Sidoarjo (2024)

The minimum sample size was calculated using the Slovin formula with a margin of error (e) of 0.10. With a population size (N) of 729 students, the minimum required sample was 88 respondents. To enhance representativeness and statistical robustness, data were collected from 142 students. After data screening, validity checks, and removal of incomplete responses, 123 questionnaires were retained for final analysis. This clarification addresses prior inconsistencies between sample size reporting across manuscript sections and ensures transparency in the sampling process.

### **2.3 Measurement and Operational Definitions**

All variables were measured using a five-point Likert scale consisting of: Always (5), Frequently (4), Sometimes (3), Rarely (2), and Very Rarely (1). This scale was selected due to its balance between respondent comprehension and statistical sensitivity (Sugiyono, 2018), and the term "*Frequently*" was consistently applied to maintain linguistic accuracy.

Operational definitions were specified to prevent conceptual ambiguity:

- a. Social Media Use (X) refers to the intensity, frequency, and mode of engagement with digital platforms such as TikTok, Instagram, and YouTube, encompassing activities including content consumption, interaction, and self-expression.
- b. Adolescent Behavior (Y) refers to observable and measurable behavioral patterns manifested in academic discipline, moral attitudes, interpersonal relationships, emotional regulation, and compliance with school norms.

Conceptually, the measurement of social media use was grounded in the Uses and Gratifications framework, which views adolescents as active agents who engage with media to fulfill psychological and social needs. Meanwhile, adolescent behavior was theoretically anchored in Social Cognitive Theory, emphasizing behavioral modeling, self-regulation, and environmental influence. This theoretical grounding strengthens construct validity and aligns the instrument with established behavioral science paradigms.

### **2.4 Validity and Reliability Testing**

Prior to hypothesis testing, the instrument underwent psychometric evaluation. Item validity was assessed using Pearson's product-moment correlation between individual item scores and total scores, with correlation coefficients greater than 0.30 considered acceptable. Reliability was examined using Cronbach's Alpha, with values exceeding 0.70 indicating satisfactory internal consistency (Mudrajad, 2013). All retained items met these criteria, confirming the adequacy of the measurement tool for subsequent analysis.

### **2.5 Data Analysis Techniques**

Descriptive statistics, including mean and standard deviation, were calculated to summarize response distributions and variability for each variable. These statistics provided foundational



insight into students' social media engagement patterns and behavioral tendencies prior to inferential testing.

To examine the relationship between social media use (X) and adolescent behavior (Y), a simple linear regression analysis was conducted using the following model:

$$Y = bX + e$$

Where:

X = social media use,

Y = adolescent behavior,

b = regression coefficient,

e = error term.

The regression coefficient ( $B = 0.255$ ) indicates that each one-unit increase in social media use corresponds to an average increase of 0.255 units in the adolescent behavior score. Although statistically significant ( $p < 0.05$ ), the effect size was modest, as reflected by an Adjusted  $R^2$  of 12.4%. This finding suggests that while social media use contributes meaningfully to behavioral variation, the majority of behavioral outcomes are influenced by other developmental and environmental factors, including family dynamics, peer relationships, and institutional regulation, an interpretation consistent with neurodevelopmental and ecological models of adolescent behavior.

## ***2.6 Assumption Testing and Ethical Considerations***

Regression assumptions were tested to ensure unbiased estimation. Normality was assessed using the Kolmogorov–Smirnov test, multicollinearity was evaluated through Variance Inflation Factor (VIF) values below 10, and heteroscedasticity was examined using the Glejser test. Autocorrelation testing was not performed, as the dataset was cross-sectional rather than time-series in nature. Diagnostic residual plots further confirmed that model assumptions were satisfactorily met.

To comply with academic reporting standards, the Results and Discussion sections were presented separately. Tables were reformatted with clear titles, consistent units, and explanatory footnotes (e.g., clarification that “Sig.” denotes p-values), thereby enhancing clarity and interpretability.

3. RESULTS

This study analyzed primary data collected through structured questionnaires administered to students of SMA Muhammadiyah 2 Sidoarjo during the 2023/2024 academic year, focusing on Grade X and XI students. A total of 142 responses were initially obtained. After data screening, including completeness checks and validity testing, 123 responses were retained for final analysis. This procedure ensured internal consistency between the reported sample size in the abstract and the dataset used for statistical testing.

3.1 Respondent Demographic Profile

The demographic characteristics of respondents are summarized in Table 2.

| Table 2. Respondent Profile |           |                |
|-----------------------------|-----------|----------------|
| Category                    | Frequency | Percentage (%) |
| Gender                      |           |                |
| Male                        | 39        | 31.7           |
| Female                      | 84        | 68.3           |
| Total                       | 123       | 100            |
| Class Level                 |           |                |
| Grade X                     | 78        | 63.4           |
| Grade XI                    | 45        | 36.6           |
| Total                       | 123       | 100            |
| Age Group                   |           |                |
| ≤ 16 years                  | 44        | 35.8           |
| > 16 years                  | 79        | 64.2           |
| Total                       | 123       | 100            |

The demographic composition indicates that the sample was dominated by female students and late adolescents (>16 years), a group that developmental neuroscience identifies as being particularly sensitive to reward-driven digital stimuli due to ongoing maturation of the prefrontal cortex and socio-emotional regulatory systems. This profile provides an important contextual backdrop for interpreting patterns of social media engagement and behavioral expression.

**3.2 Descriptive Statistics of Main Variables**

Descriptive analyses were conducted to examine the central tendency and dispersion of the two primary variables: Social Media Use (X) and Adolescent Behavior (Y). The results are presented in Table 3.

| Table 3. Descriptive Statistics of Main Variables |     |      |                   |         |         |
|---------------------------------------------------|-----|------|-------------------|---------|---------|
| Variable                                          | N   | Mean | Std.<br>Deviation | Minimum | Maximum |
| Social<br>Media Use<br>(X)                        | 123 | 3.82 | 0.56              | 2.6     | 4.8     |
| Adolescent<br>Behavior<br>(Y)                     | 123 | 3.57 | 0.49              | 2.4     | 4.6     |

The mean score for social media use indicates a relatively high level of engagement among students, while the behavioral variable falls within a moderate range.

From a neuropsychological perspective, this pattern suggests sustained digital engagement that may tax executive control functions such as attention regulation and time management, while behavioral manifestations remain moderated by institutional norms and external regulation within the school environment.

**3.3 Instrument Validity, Reliability, and Assumption Testing**

Item-level validity testing demonstrated that all questionnaire items for both variables yielded significance values below 0.05, indicating satisfactory construct validity. Reliability analysis further revealed Cronbach’s Alpha coefficients exceeding 0.60, confirming acceptable internal consistency.

Normality testing using probability–probability (P–P) plots showed that residuals closely followed the diagonal reference line, suggesting a normal distribution. The heteroscedasticity test revealed a random dispersion of residuals around the zero line, indicating homoscedastic variance and meeting regression assumptions.

These results support the psychometric adequacy of the instrument and reinforce that the observed associations are not artifacts of measurement error or assumption violations.

### **3.4 Regression Analysis and Hypothesis Testing**

Inferential analysis was conducted using simple linear regression to examine the association between social media use and adolescent behavior. The t-test results are presented in Table 4.

**Table 4.** t-Test Results

| <b>Model</b>     | <b>Unstandardized Coefficients (B)</b> | <b>Std. Error</b> | <b>Beta</b> | <b>t</b> | <b>Sig. (p)</b> |
|------------------|----------------------------------------|-------------------|-------------|----------|-----------------|
| Constant         | 6.18                                   | 2.269             | -           | 2.724    | 0.007           |
| Social Media Use | 0.255                                  | 0.06              | 0.363       | 4.28     | 0               |

The regression coefficient ( $B = 0.255$ ,  $p < 0.001$ ) indicates that a one-unit increase in social media use is associated with a 0.255-point increase in adolescent behavior scores.

Importantly, this positive coefficient does not imply that increased social media use leads to more desirable behavior. Rather, it reflects heightened behavioral expression, both adaptive and maladaptive, as digital engagement intensifies. This interpretation aligns with Social Cognitive Theory, which posits that increased exposure to modeled behaviors amplifies behavioral enactment rather than determining moral valence.

The regression model can be expressed as:

$$Y = 6.180 + 0.255X$$

### **3.5 Explanatory Power of the Model**

The coefficient of determination is presented in Table 5.

**Table 5.** Coefficient of Determination ( $R^2$ )

| <b>Model</b> | <b>R</b> | <b><math>R^2</math></b> | <b>Adjusted <math>R^2</math></b> | <b>Std. Error of Estimate</b> |
|--------------|----------|-------------------------|----------------------------------|-------------------------------|
| 1            | 0.363    | 0.132                   | 0.124                            | 3.3369                        |

The Adjusted  $R^2$  value of 0.124 indicates that social media use accounts for 12.4% of the variance in adolescent behavior, while the remaining 87.6% is attributable to other factors.

Although the explanatory power is modest, this magnitude is consistent with behavioral and neurodevelopmental research,

where complex adolescent behaviors are shaped by multiple interacting systems, including family dynamics, peer influence, religiosity, and school climate. The finding underscores that social media functions as a significant but not exclusive contextual factor within a broader ecological framework.

### ***3.6 Contextual and Demographic Interpretation***

The results must be interpreted within the socio-geographic context of Sidoarjo as a metropolitan satellite (buffer) city. Adolescents in this setting experience digital exposure comparable to large urban centers while remaining embedded in structured religious and educational environments. This hybrid context may explain why social media use demonstrates a statistically significant association with behavior, yet with limited explanatory dominance.

The demographic profile dominated by late adolescents and female students also suggests heightened sensitivity to social feedback mechanisms inherent in social media platforms, such as likes, comments, and peer validation, which are known to activate reward-processing neural circuits during adolescence.

### ***3.7 Summary of Key Findings***

In summary, the findings demonstrate that social media use is significantly associated with adolescent behavior among students of SMA Muhammadiyah 2 Sidoarjo, albeit with modest explanatory power. The results reinforce the notion that digital engagement serves as an influential environmental factor that interacts with developmental, institutional, and socio-cultural determinants rather than acting as a sole driver of behavioral outcomes.

## **4. DISCUSSION**

The regression analysis demonstrates that social media use is statistically associated with adolescent behavior in a positive directional manner ( $p < 0.05$ ). It is crucial to emphasize that the term “*positive*” in this context refers strictly to the direction of the statistical relationship rather than its moral, developmental, or psychological desirability. In substantive terms, increased engagement with social media tends to intensify behavioral manifestations among adolescents, encompassing both adaptive and maladaptive expressions.

This distinction is essential to avoid a common misinterpretation of statistical findings. Within behavioral and

neuropsychological research, a positive coefficient does not imply improvement or benefit; instead, it indicates that variations in one variable are accompanied by proportional variations in another. In the present study, higher levels of social media engagement were associated with greater behavioral salience, not necessarily healthier behavioral outcomes.

Empirically, this interpretation is supported by descriptive findings. A considerable proportion of respondents reported that social media use interfered with academic focus and time management. Approximately 37.3% acknowledged a decline in learning motivation, while 31.7% reported reduced academic performance attributable to excessive digital engagement. Moreover, more than half of the respondents indicated exposure to potentially inappropriate online content (61.3%) and involvement in interpersonal conflicts arising from online interactions (57%). These findings illustrate how heightened social media use may amplify both productive activities (e.g., information seeking, peer connection) and problematic behaviors (e.g., procrastination, conflict escalation).

When examined alongside the modest Adjusted  $R^2$  value (12.4%), the results suggest that social media use accounts for only a limited proportion of variance in adolescent behavior. This relatively low explanatory power aligns with neurodevelopmental and ecological models of adolescence, which posit that behavior emerges from the interaction of multiple systems, including family dynamics, peer relationships, school climate, religiosity, and individual self-regulation capacities. Consequently, the observed association should not be interpreted as causal, but rather as one contributory factor within a broader behavioral ecology.

From a theoretical standpoint, the findings are consistent with Bandura's Social Learning Theory. Adolescents are likely to model behaviors observed in digital environments, whether prosocial (e.g., collaboration, creativity) or antisocial (e.g., cyberbullying, verbal aggression). Increased exposure heightens the probability of behavioral imitation, particularly during adolescence, a developmental phase marked by heightened sensitivity to social cues and peer validation. In parallel, the results support Uses and Gratifications Theory, which conceptualizes adolescents as active agents who engage with social media to fulfill

psychological needs such as identity exploration, social belonging, and entertainment. However, the same gratification mechanisms that sustain engagement may also reinforce maladaptive patterns when reward-seeking becomes excessive or poorly regulated, a phenomenon closely linked to developing executive control systems in the adolescent brain.

The findings may also be interpreted through the lens of digital stress and cognitive load perspectives. Continuous exposure to online stimuli notifications, social comparison, and rapid information flow can contribute to emotional dysregulation and attentional fragmentation. Neuropsychological research suggests that such overstimulation may strain prefrontal regulatory processes, thereby increasing susceptibility to impulsive behavior and reduced academic persistence, even in environments that promote strong moral and disciplinary norms.

Comparisons with prior empirical studies further contextualize the present results. Mulyono (2021) reported that excessive social media exposure among Indonesian adolescents was associated with increased dependency and diminished academic motivation. Similarly, Astuti (2022) highlighted the dual function of TikTok as both a medium for creative expression and a trigger for antisocial behavior. These findings converge with the present study in underscoring that a *“positive and significant”* statistical association reflects behavioral intensification rather than unequivocal benefit.

Importantly, the institutional context of this study, an Islamic-based private high school located in a metropolitan satellite city, provides additional interpretive nuance. Despite structured moral education and school-level regulation, external digital influences associated with urbanized online cultures continue to shape adolescent behavior. This suggests that institutional values may moderate, but not fully neutralize, the behavioral impact of intensive social media exposure.

In summary, this study positions social media as a behavioral catalyst rather than a unidirectional determinant of positive or negative outcomes. Its influence is contingent upon contextual factors, content exposure, individual coping strategies, and regulatory environments. The findings highlight the importance of strengthening digital literacy, fostering self-regulation skills, and

implementing guided supervision by parents and educators to mitigate adverse behavioral consequences while preserving the constructive potential of social media use.

## 5. CONCLUSION

This study investigated the association between social media use and adolescent behavior among students at SMA Muhammadiyah 2 Sidoarjo, an Islamic-based private high school situated in a metropolitan satellite context. The results of the simple linear regression analysis revealed a statistically significant positive directional relationship ( $B = 0.255$ ,  $p < 0.05$ ) between social media use and adolescent behavior. Importantly, the term “*positive*” in this finding refers solely to the statistical direction of the association and does not imply that increased social media use leads to socially, morally, or psychologically beneficial outcomes.

In substantive terms, the findings indicate that higher intensity and frequency of social media engagement are associated with increased behavioral expression among adolescents. This behavioral amplification encompasses both constructive manifestations, such as academic collaboration, access to learning resources, and peer connectivity, and maladaptive outcomes, including procrastination, exposure to harmful content, cyberbullying, and emotional strain. From a neuropsychological perspective, this pattern suggests that social media functions as a behavioral catalyst that heightens reactivity within still-developing executive control systems, particularly those related to impulse regulation, emotional processing, and attentional control.

The relatively modest Adjusted  $R^2$  value of 12.4% demonstrates that social media use explains only a limited proportion of variance in adolescent behavior. This finding underscores that adolescent behavior is shaped by a constellation of interacting factors, including parental supervision, religiosity, peer influence, school climate, and broader socio-economic conditions. Consistent with ecological and developmental models, the present results affirm that digital media exposure represents one contextual influence among many rather than a dominant or deterministic cause of behavioral change.

Given the cross-sectional nature of this study, causal inferences cannot be drawn. The observed associations reflect



concurrent relationships rather than temporal or developmental trajectories. Future research is therefore encouraged to employ longitudinal or experimental designs to explore causal pathways and developmental dynamics of adolescent behavior in relation to sustained digital media exposure. Incorporating moderating and mediating variables such as digital literacy, emotional intelligence, self-regulation capacity, and family communication patterns would substantially enhance the explanatory power and theoretical depth of future models.

From an applied perspective, the findings highlight the importance of integrating digital literacy education within school-based curricula, particularly in environments that emphasize moral and character education. Schools are encouraged to move beyond restrictive approaches and instead foster reflective and psychologically informed digital engagement. Teachers, counselors, and parents should collaborate to guide adolescents in navigating online environments responsibly, helping them differentiate between constructive digital participation and behaviors that may compromise academic performance or mental well-being.

At the policy level, the study supports the inclusion of media awareness and emotional resilience programs within secondary education frameworks. Such initiatives should address ethical online conduct, healthy screen-time management, and coping strategies for digital stress, thereby equipping adolescents with the neurocognitive and socio-emotional skills necessary to thrive in an increasingly digitalized society.

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This research was conducted as part of the academic requirements of the Neuropsychology course within the undergraduate psychology program. The authors acknowledge that the scope of the present study was intentionally delimited to a single independent variable in order to maintain analytical focus and feasibility at the undergraduate level. Nevertheless, this limitation also opens avenues for future scholarly inquiry.

Future researchers are encouraged to expand upon this work by incorporating additional explanatory variables, such as religiosity, family socio-economic background, parental mediation, and digital literacy, to obtain a more comprehensive understanding of adolescent behavior in digital environments. Such extensions may enhance the explanatory power of the model and contribute to more nuanced interpretations across diverse socio-cultural contexts.

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