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The Relationship Between Loneliness And the Intensity of Social Media Use on Depression Symptoms among Students in Medan City

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ABSTRACT

This study aims to analyze the effect of loneliness and social media use intensity on depressive symptoms among university students. The study was motivated by the increasing use of social media among university students and the presence of psychological conditions such as loneliness that may be associated with depressive symptoms. A quantitative approach with a survey method was employed. Data were collected through questionnaires distributed to 172 university students. Loneliness (X1) and social media use intensity (X2) were measured using a 1–5 Likert scale, while depressive symptoms (Y) were measured using the Patient Health Questionnaire-9 (PHQ-9) with a scoring range of 0–3 for each item. The data were analyzed using SPSS, including validity, reliability, normality, correlation, multiple linear regression, t-test, F-test, and coefficient of determination. The results showed that the research instruments had good reliability, with Cronbach's Alpha values of 0.863 for loneliness, 0.859 for social media use intensity, and 0.814 for depressive symptoms. The normality test of the residuals showed a Monte Carlo significance value of 0.054, indicating that the residuals were normally distributed. Multiple linear regression analysis produced an R value of 0.594, R Square of 0.352, and Adjusted R Square of 0.345. This indicates that loneliness and social media use intensity jointly explained 35.2% of the variance in depressive symptoms, while the remaining 64.8% was explained by other factors outside the research model. Partially, loneliness had a positive and significant effect on depressive symptoms, with a regression coefficient of 0.735, t = 7.783, and Sig. = 0.000. Meanwhile, social media use intensity had a negative and significant effect on depressive symptoms, with a regression coefficient of -0.245, t = -2.425, and Sig. = 0.016. Simultaneously, loneliness and social media use intensity had a significant effect on depressive symptoms, as indicated by F = 45.971 and Sig. = 0.000. These findings indicate that loneliness was the strongest factor contributing to the explanation of depressive symptoms among the respondents.

I. INTRODUCTION

The development of digital technology has brought significant changes to students' lives, particularly in the way they communicate, build social relationships, obtain information, and spend their leisure time. Social media platforms such as Instagram, TikTok, WhatsApp, YouTube, X, and various other digital platforms have become an inseparable part of students' daily activities (Rizqiyah et al., 2025; Arbiani et al., 2025). Social media essentially provides various benefits, such as facilitating communication, expanding social networks, providing access to information, and serving as a means of entertainment and self-actualization (Nasution et al., 2025). However, the increasingly intensive use also raises concerns about its impact on psychological conditions, especially when social media use is no longer merely a means of communication, but is used as a way to cope with negative feelings, loneliness, academic pressure, or interpersonal problems. Students are a group that

is at the stage of development toward adulthood with various academic, social, economic, and personal demands. Changes in social environments, performance expectations, adjustments to college life, and the need to build identity and interpersonal relationships can create psychological pressure (Rahmadani et al., 2020; Rahayu et al., 2020). Under certain conditions, this pressure can develop into feelings of isolation, lack of meaningful social relationships, and ultimately lead to loneliness. Loneliness is not solely related to the number of social interactions a person has, but more to the gap between the expected social relationships and the social relationships that the individual actually experiences (Manulang and Sugiati, 2026). This phenomenon becomes even more complex in the digital environment. Students can have many connections on social media, but at the same time, they still feel they lack adequate emotional closeness with others. Research on students in Indonesia shows that problematic social media use is related to mental health conditions. Sujarwoto, Saputri, and Yumarni, in their research involving 709 students from various universities in Indonesia, found that students with higher levels of social media addiction are more likely to experience symptoms of depression. The research used depression indicators based on the Center for Epidemiological Studies-Depression (CES-D) and showed that the relationship between social media use and mental health needs to be considered in the Indonesian student population. The findings are in line with Al Aziz's research, which specifically examined the relationship between the intensity of social media use and depression levels among 250 students. The research used a correlational quantitative approach and the Beck Depression Inventory-II instrument to measure depression (Aziz, 2020). The research results indicate that students have varying levels of social media usage intensity and depression levels within certain categories, thus providing empirical evidence that social media usage is an important aspect to study in relation to students' psychological conditions.

However, the relationship between the duration of social media use and depression does not always show a simple pattern. Ghanayem's research on students shows that the time spent on social media has only a relatively weak relationship with symptoms of depression, anxiety, stress, and loneliness (Ghananyem et al., 2024). Conversely, problematic social media use shows a stronger relationship with various indicators of mental health. These findings are important because they show that mental health issues cannot be adequately explained solely by questions about how long someone uses social media, but also need to consider how and for what purposes social media is used. The issue becomes increasingly relevant when the use of social media is related to loneliness. Social media can provide individuals with the opportunity to stay connected with others, but excessive or problematic use can create interaction patterns that do not always result in genuine social closeness. A longitudinal study of 538 students in China shows a reciprocal relationship between loneliness and problematic social media use. Students with higher levels of loneliness tend to show an increase in problematic social media use, while problematic social media use is also associated with an increase in loneliness over time. The relationship between loneliness and social media use is also evident in the Indonesian context. The research by Miftahurrahmah and Harahap on students at Yogyakarta State University shows a relationship between social media addiction and loneliness. The research used a correlational quantitative approach and involved 110 students. The findings show that social media use and loneliness are two psychosocial conditions that can be interrelated among student groups (Miftahurrahman and Harahap, 2020). In the student group, this relationship is also demonstrated through research on the intensity of social media use and loneliness among students. Trikandini A studied the relationship between the intensity of social media use and loneliness among students and provided empirical evidence that both variables are relevant to be examined together in the student population. Additionally, research on social media users among students in Indonesia shows that social media is often used to maintain interactions and reduce feelings of isolation. This shows the dual nature of social media use: on one hand, it can help

individuals maintain social connections, but on the other hand, it can become a less adaptive usage pattern if used as the primary mechanism for addressing psychological issues (Trikandi and Kurniasari, 2021).

Loneliness itself has a fairly consistent relationship with symptoms of depression. Research on students shows that loneliness is related to increased symptoms of depression, especially when students experience limited social relationships, psychological pressure, or reduced social support. In the research by Hager, Judah, and Milam, loneliness and depression among students are of particular concern because these conditions can develop through psychological processes such as boredom and recurring negative thought patterns. Thus, loneliness can not only be viewed as a social condition but also as a psychological factor potentially related to the emergence of depressive symptoms in students Hager et al., 2022). Longitudinal research on students also reinforces the relationship between digital technology use, loneliness, and depressive symptoms. A study published in Addictive Behaviors shows that smartphone addiction and depressive symptoms have a bidirectional relationship among students, with loneliness acting as a mediator in that relationship. These findings show that the relationship between technology use and depression is not linear and straightforward. Psychological conditions such as loneliness can serve as a mechanism linking technology usage patterns with symptoms of depression (Shi et al., 2023). Another study conducted on students also shows a relationship between social media use and depressive symptoms. Mateen and Agha, for example, conducted a correlational study on students regarding social media use and depressive symptoms. The research provides empirical support that social media usage patterns need to be examined alongside mental health indicators in the student population (Shi et al., 2023). Similarly, the research by Onggono and Virlia on Instagram users found that social media addiction is related to depression, although social comparison did not prove to moderate that relationship. These results indicate that the factors linking social media use with depression may have complex patterns and cannot always be explained through a single psychological mechanism (Mateen and agha, 2023). More recent research further emphasizes the importance of examining loneliness, social media use, and depression simultaneously. Ghanayem et al. found that students who use social media as a coping mechanism at a high level exhibit higher levels of depression, anxiety, stress, and loneliness. Interestingly, the relationship between social media use and mental health issues becomes stronger when the use has developed into problematic social media use. Meanwhile, the research by Aslan and Polat on students also places social media addiction, loneliness, and depression as part of the interrelated psychosocial conditions in students' lives (Aslan and Polat, 2024). Based on various studies, it can be seen that there are at least three issues that need attention. First, students are a group that is vulnerable to psychological pressure and loneliness. Second, social media has become an important part of students' lives, but the intensity of social media use does not necessarily have the same impact on every individual. Third, loneliness and social media use can occur simultaneously and are related to symptoms of depression. Therefore, research that only examines one factor in isolation has not fully provided an understanding of how the psychosocial conditions of students are formed in the digital environment.

The urgency of this research is further strengthened because empirical evidence regarding the relationship between the intensity of social media use and symptoms of depression still shows varied results. Ghanayem et al. found that the duration of social media use has a relatively weak relationship with depression, whereas problematic social media use shows a stronger relationship. These findings differ from research that found a relationship between the intensity or addiction to social media and depression among students. The difference in results indicates a need for further research with different respondent characteristics and geographical contexts (Ghanayem et al., 2024).

Additionally, some previous studies were conducted during the COVID-19 pandemic or in different countries and cultural contexts. The social conditions of students after the pandemic phase have changed, especially in learning patterns, social interactions, technology use, and daily activities. Therefore, the research results obtained in the pandemic context cannot be automatically generalized to describe the conditions of students in the subsequent period. Research on students in the city of Medan is important to provide a more contextual empirical picture of the relationship between loneliness and the intensity of social media use with symptoms of depression in the Indonesian student environment. This research has updates in several aspects. First, the research combines loneliness and the intensity of social media use as two variables that are analyzed simultaneously in relation to depression symptoms. This approach differs from studies that only focus on social media use and depression or loneliness and depression separately. Second, the research uses students in the city of Medan as the research context, so it is expected to provide a more specific picture of the psychosocial conditions of students in the urban context of Indonesia. Third, the research distinguishes the concept of social media usage intensity from addiction or problematic social media use, so the focus of the study does not directly assume that high social media usage is a form of addiction. This distinction is important because previous research has shown that the duration of use and problematic social media use can have different relationships with mental health. Another update lies in the effort to position loneliness as a psychological factor alongside the intensity of social media use in explaining symptoms of depression. Longitudinal studies even show that loneliness and problematic social media use can have a reciprocal relationship, so both should not always be understood as standalone factors. By examining both variables simultaneously, this research is expected to provide a more comprehensive understanding of the psychosocial factors related to depression symptoms among students. Thus, the research titled "The Relationship Between Loneliness and the Intensity of Social Media Use with Depression Symptoms Among Students in Medan City" is important to conduct in order to obtain empirical evidence regarding the correlation between students' psychological conditions and their social media usage patterns. The research results are expected to not only contribute to the development of psychology and mental health studies among students but also provide input for universities in designing promotive and preventive programs related to mental health. Understanding loneliness, social media usage patterns, and depression symptoms can help universities develop counseling and educational services that better meet the needs of students, especially in facing an increasingly digitally connected social environment.

II. METHODS

Place and Time of Research

This research was conducted in the city of Medan, North Sumatra Province. The research subjects are active students currently pursuing their education at universities in the city of Medan and meet the criteria set by the researcher. Data collection was conducted online using a questionnaire through Google Forms. The questionnaire was distributed to students via communication media and social media. During the data collection process, the researcher maintained the confidentiality of the respondents' identities and obtained the respondents' consent before filling out the questionnaire. The research was conducted over six months, from March to August 2026. The research activities include literature review, instrument development, data collection, data processing, data analysis, result discussion, and journal article preparation.

Types and Approaches to Research

This research uses a quantitative approach with a correlational research type. The quantitative approach is used because the research data is in the form of numbers obtained through questionnaires

and subsequently analyzed using statistics (Priadana and Sunarsi, 2021). Correlational research is used to determine the relationship between the variable Loneliness (X1) and the Intensity of Social Media Use (X2) with Depression Symptoms (Y) among students in the city of Medan. This research does not provide any special treatment to the respondents. The researcher only measures the condition of each variable based on the respondents' answers, and then examines the relationships between these variables. The variables in this study consist of: (1) Loneliness (X1) as the first independent variable, (2) Intensity of Social Media Use (X2) as the second independent variable, (3) Depression Symptoms (Y) as the dependent variable. The relationships between the variables can be described as Loneliness (X1) → Depression Symptoms (Y). Intensity of Social Media Use (X2) → Depression Symptoms (Y). Additionally, the study also examines the relationship between Loneliness (X1) and Intensity of Social Media Use (X2) together with Depression Symptoms (Y).

Population and Sample

The population in this study consists of active students who are currently pursuing their education at universities in the city of Medan. Based on the data used in the research, the determined population is 172 students. This population was chosen because it aligns with the research objectives, which are to understand the relationship between loneliness and the intensity of social media use with symptoms of depression among students in Medan City. The sample in this study was determined using the total sampling technique, meaning that all members of the population were used as the research sample. Thus, from the total population of 172 students, all were made respondents in the study, resulting in a sample size of 172 students. The selected respondents were active students at universities in Medan City, aged at least 18 years, actively using social media, willing to participate in the study, complete the questionnaire, and agree to the informed consent before filling out the questionnaire. Based on these criteria, the number of respondents used in this study was 172 students.

Techniques and Instruments for Data Collection

Research data were collected using a questionnaire distributed online via Google Forms. The questionnaire was used to obtain data on Loneliness (X1), Intensity of Social Media Use (X2), and Depression Symptoms (Y). Loneliness was measured using the UCLA Loneliness Scale Version 3, while the Intensity of Social Media Use was measured using a questionnaire based on indicators of frequency, duration, attention and engagement, as well as social media usage activities. Meanwhile, Depression Symptoms are measured using the Patient Health Questionnaire-9 (PHQ-9). The variables of Loneliness and Intensity of Social Media Use use a 1–5 Likert scale, while the PHQ-9 uses a score of 0–3 based on the frequency of symptoms over the past two weeks. The PHQ-9 is used to measure depression symptoms and not to establish a clinical diagnosis.

Operational Variables

Operational variables are used to explain how each variable in the research is measured.

Variable	Operational Definition	Indicator	Instrument	Scale
Loneliness (X1)	The subjective feelings of students when their social relationships do not match the social relationships they expect.	Social connectedness, interpersonal closeness, social isolation, lack of social relationships	Escala de Soledad de UCLA Versión 3	Likert 1–5
Intensity of Social Media Use (X2)	The level of student engagement in using social media	Frequency, duration, attention and engagement, usage activity	Research questionnaire	Likert 1–5
Depression Symptoms (Y)	The level of occurrence of symptoms related to depression over the past two weeks	Affective, physical, cognitive, and psychomotor symptoms	PHQ-9	Score 0–3

III. RESULTS AND DISCUSSION

Description of Research Respondents

This research involves 172 students in the city of Medan as respondents. The characteristics of the respondents were observed based on gender, age, education level, semester, type of university, social media used, and average time spent on social media. All respondent data were complete, so there were no missing data. Based on gender, there are 71 male respondents (41.3%) and 101 female respondents (58.7%). Thus, there are more female respondents than male respondents. Based on age, the majority of respondents are in the 21–23 year age group, with 50 people (29.1%), followed by the 18–20 year age group with 47 people (27.3%). Meanwhile, there are 35 respondents (20.3%) aged ≥30 years, 24 respondents (14.0%) aged 27–29 years, and 16 respondents (9.3%) aged 24–26 years. Based on educational level, most respondents are undergraduate students, with 116 people (67.4%). Next, there are 29 diploma students (D3/D4) (16.9%) and 27 master's students (15.7%). Based on semester, the majority of respondents are from the 5th–6th and 7th–8th semesters, each with 39 people (22.7%). This indicates that the respondents come from various stages of education, from early semesters to final-year students. Based on the type of university, 92 respondents (53.5%) are from public universities (PTN) and 80 respondents (46.5%) are from private universities (PTS). This composition indicates that the respondents come from both public and private universities in relatively balanced numbers. Based on the most widely used social media, TikTok became the platform with the highest number of users, namely 38 respondents (22.1%). Next, Instagram and WhatsApp each had 31 respondents (18.0%). Facebook was used by 18 respondents (10.5%), X/Twitter by 17 respondents (9.9%), YouTube by 16 respondents (9.3%), Threads by 12 respondents (7.0%), and other social media by 9 respondents (5.2%). This shows that respondents use various social media platforms. Based on the average time spent on social media, the majority of respondents use social media for more than 2–4 hours per day, with 40 people (23.3%), followed by those using it for more than 4–6 hours, totaling 39 people (22.7%). Next, 32 people (18.6%) use social media for 1–2 hours, 31 people (18.0%) for less than 1 hour, and 30 people (17.4%) for more than 6 hours per day. If the usage of more than 2 hours per day is combined, there are 109 respondents (63.4%). This condition shows that social media has become a part that is quite frequently used in the daily lives of the respondents. Overall, the research respondents have diverse characteristics. The majority of respondents are female, aged 21–23 years, undergraduate students, and come from the middle and final semesters. TikTok is the most widely used social media platform, while the majority of respondents use social media for more than two hours per day. This characteristic serves as an initial insight into understanding the relationship between loneliness, the intensity of social media use, and symptoms of depression among students in Medan City.

Description of Research Variables

The description of the research variables aims to provide an overview of the conditions of Loneliness (X1), Intensity of Social Media Use (X2), and Depression Symptoms (Y) based on the responses of 172 respondents. The Loneliness and Intensity of Social Media Use variables are measured using a 1–5 Likert scale, while Depression Symptoms are measured using the PHQ-9 with scores of 0–3 on each item. The descriptive statistics results for each variable are presented in the following table.

Table of Descriptive Statistics for Research Variables

No.	Variable	Number of Items	N	Min.	Maks.	Mean	Desviación estándar	Descriptive Information
1	Loneliness (X1)	8	172	12	37	24,83	5,232	Tending to be moderate

2	Intensity of Social Media Use (X2)	8	172	18	39	28,37	4,898	Tends to be high
3	Depression Symptoms (Y)	9	172	0	27	7,92	5,085	Mild symptoms

Source: Primary data processed using SPSS, 2026

Based on the results of the descriptive analysis of 172 respondents, all data on the research variables are complete and there are no missing data. The variables analyzed consist of Loneliness (X1), Intensity of Social Media Use (X2), and Depression Symptoms (Y). The Loneliness variable (X1) has a minimum score of 12 and a maximum score of 37, with an average value of 24.83 and a standard deviation of 5.232. These values indicate that the respondents' level of loneliness is generally at a moderate tendency. However, there are differences in the levels of loneliness among respondents, as the scores obtained are quite varied. Based on the indicators, X1.1 has the highest average of 3.96, while X1.6 has the lowest average of 2.47. This indicates that students' experiences of loneliness vary across each measured aspect. The variable of Social Media Usage Intensity (X2) has a minimum score of 18 and a maximum of 39, with an average of 28.37 and a standard deviation of 4.898. The results indicate that the intensity of social media use among respondents is generally high. Indicator X2.8 has the highest average at 4.06, followed by X2.1 at 3.96 and X2.7 at 3.95. Meanwhile, X2.6 has the lowest average at 3.05. These results indicate that the intensity of social media use can be viewed from several aspects, not just the duration of its use. This condition is also reflected in the time spent on social media, with 109 respondents (63.4%) using social media for more than two hours per day. This shows that social media is quite frequently used in the daily lives of students. However, the high use of social media cannot yet be considered problematic because the relationship with psychological conditions needs to be proven through subsequent statistical analysis. The Depression Symptoms variable (Y) measured using the PHQ-9 has a minimum score of 0 and a maximum score of 27, with an average of 7.92 and a standard deviation of 5.085. Based on the PHQ-9 interpretation range, the average score indicates mild depressive symptoms. However, these results only depict the average condition of the group and do not mean that all respondents are experiencing depression. This is evident from the varying scores, ranging from 0 to 27. Based on the indicators, Y.4 has the highest average of 1.28, while Y.9 has the lowest average of 0.46. This means that the occurrence of symptoms experienced by respondents varies across each measured aspect. Overall, the results of the descriptive analysis show that respondents have an average loneliness level of 24.83, which falls within the moderate range, a social media usage intensity of 28.37, which falls within the high range, and depression symptoms with an average PHQ-9 score of 7.92, which indicates mild depression symptoms. These descriptive results serve as a basis for further examining the relationship between loneliness, social media usage intensity, and depression symptoms through subsequent statistical analysis.

Research Analysis

The research analysis was conducted to examine the relationship and contribution of Loneliness (X1) and Intensity of Social Media Use (X2) to Depression Symptoms (Y) among students in the city of Medan. All tests were conducted using SPSS with a total of 172 respondents. The analysis includes reliability tests, normality tests, multicollinearity tests, autocorrelation tests, multiple linear regression analysis, partial tests (t), simultaneous tests (F), and the coefficient of determination (R^2).

Summary Table of Research Analysis Results

No.	Type of Test	Indicator/Result	Value	Criteria	Conclusion
1	Reliability X1	Alfa de Cronbach	0,863	> 0,70	Reliable
2	Reliability X2	Alfa de Cronbach	0,859	> 0,70	Reliable
3	Reliability Y	Alfa de Cronbach	0,814	> 0,70	Reliable
4	Normality	K-S Asymp. Sig.	0,051	> 0,05	Normal
5	Normality	Monte Carlo Sig.	0,054	> 0,05	Normal
6	Multicollinearity X1	Tolerancia / VIF	0,406 / 2,461	Tolerance > 0,10; VIF < 10	There is no multicollinearity.
7	Multicollinearity X2	Tolerancia / VIF	0,406 / 2,461	Tolerance > 0,10; VIF < 10	There is no multicollinearity.
8	Autocorrelation	Durbin-Watson	2,155	Mendekati 2	Not indicated autocorrelation
9	Multiple Linear Regression	R	0,594	-	Simultaneous relationship is ongoing
10	Multiple Linear Regression	R cuadrado	0,352	-	Contribution 35.2%
11	Multiple Linear Regression	R cuadrado ajustado	0,345	-	Corrected contribution 34.5%
12	t-test X1	t / Sig.	7,783 / 0,000	Sig. < 0,05	Significant
13	t-test X2	t / Sig.	-2,425 / 0,016	Sig. < 0,05	Significant
14	test F	F / Sig.	45,971 / 0,000	Sig. < 0,05	Significant simultaneously
15	Regression equation	B X1 / B X2	0,735 / -0,245	-	X1 positive; X2 negative after controlling for X1
16	Caso atípico/influyente	Max. Cook's Distance	0,102	< 1	Does not show the influence of extreme cases

Sumber: Data primer diolah menggunakan SPSS, 2026

Reliability Test

The reliability test is conducted to determine the consistency of the instrument in measuring the research variables. An instrument is declared reliable if the Cronbach's Alpha value is greater than 0.70. The research results show that the Loneliness variable (X1) obtained a Cronbach's Alpha value of 0.863, the Intensity of Social Media Use variable (X2) obtained a value of 0.859, and the Depression Symptoms variable (Y) obtained a value of 0.814. All these values are greater than 0.70. Therefore, all three research instruments are declared reliable and can be used for further analysis.

Normality Test

The normality test is conducted to determine whether the residuals in the regression model are normally distributed. The results of the Kolmogorov-Smirnov test show an Asymp. Sig. value of 0.051 and a Monte Carlo Sig. value of 0.054. Both values are greater than 0.05, indicating that the residuals can be considered normally distributed. Thus, the normality assumption in this study is met, and the regression analysis can proceed.

Multicollinearity Test

The multicollinearity test is conducted to determine whether there is a too strong relationship between the independent variables. The research results show that Loneliness (X1) and Intensity of Social Media Use (X2) have a Tolerance value of 0.406 and a VIF of 2.461. The Tolerance value is greater than 0.10 and the VIF is less than 10. Therefore, there is no multicollinearity problem in the regression model. This means that X1 and X2 can still be used together as independent variables.

Autocorrelation Test

The autocorrelation test is conducted to determine whether there is a relationship between the residuals of one observation and another. Based on the test results, the Durbin-Watson value is 2.155. The value is close to 2, indicating that there is no serious autocorrelation problem. Thus, the regression model in this study meets the autocorrelation assumption.

Multiple Linear Regression Analysis

Multiple linear regression analysis is used to determine the relationship between Loneliness (X1) and Social Media Usage Intensity (X2) with Depression Symptoms (Y). The analysis results in the regression equation Y = -3.375 + 0.735X1 - 0.245X2. The Loneliness Coefficient of 0.735 indicates a positive relationship, meaning that an increase in loneliness scores is associated with an increase in depression symptom scores when the intensity of social media use remains constant. Meanwhile, the X2 coefficient of -0.245 indicates a negative relationship after controlling for the influence of Loneliness. This means that in this model, an increase in the score of social media usage intensity is associated with a decrease in the depression symptom score by 0.245 points while loneliness remains constant. The negative direction on X2 needs to be understood carefully. This result does not mean that social media use directly reduces depression symptoms. The difference in the direction of the relationship can occur due to the relationship between Loneliness and the Intensity of Social Media Use when both variables are analyzed simultaneously. Therefore, these results indicate a statistical relationship and cannot be interpreted as a cause-and-effect relationship.

Partial Test (t-test)

The t-test is used to determine the relationship of each independent variable with Depression Symptoms. The analysis results show that Loneliness (X1) has a t-value of 7.783 with a significance of 0.000 and a B coefficient of 0.735. Since the significance value is less than 0.05, H0 is rejected and H1 is accepted. Thus, Loneliness has a positive and significant relationship with Depression Symptoms among students in the city of Medan. The higher the loneliness score, the higher the depression symptom score in the research model. The Beta value of 0.756 indicates that Loneliness is the most dominant variable in the model compared to the Intensity of Social Media Use. This result shows that students who have higher feelings of loneliness tend to have higher symptoms of depression. However, the results of this study show a statistically significant relationship or prediction and not evidence that loneliness directly causes depression.

The Influence of Social Media Usage Intensity (X2) on Depression Symptoms (Y)

The t-test results show that the Intensity of Social Media Use (X2) has a t-value of -2.425 with a significance of 0.016 and a B coefficient of -0.245. Since the significance value is less than 0.05, H0 is rejected and H1 is accepted. Thus, the Intensity of Social Media Use has a significant relationship with Depression Symptoms partially, with a negative direction in the regression model. However, these results need to be understood with caution. In a simple correlation, the Intensity of Social Media Use has a positive and significant relationship with Depression Symptoms ($r = 0.284$; $p = 0.004$). After the Loneliness variable was included in the regression, the direction of the X2 relationship changed to negative. This indicates that the relationship between social media use and depression symptoms is quite complex and influenced by the presence of the Loneliness variable. Therefore, these results cannot be interpreted as social media use directly reducing depression symptoms.

Simultaneous Test (F Test)

The F Test is conducted to determine the relationship between Loneliness and the Intensity of Social Media Use together with Depression Symptoms. The analysis results show an F value of 45.971 with a significance of 0.000. Because the significance value is less than 0.05, H0 is rejected and H1 is accepted. Thus, Loneliness and the Intensity of Social Media Use together have a significant relationship with Depression Symptoms among students in the city of Medan. This indicates that both variables together can be used to explain the variation in Depression Symptoms.

Coefficient of Determination (R^2)

The coefficient of determination is used to determine the ability of the variables Loneliness and Intensity of Social Media Use in explaining Depression Symptoms. The analysis results show an R value of 0.594, an R Square value of 0.352, and an Adjusted R Square value of 0.345. The R Square value of 0.352 indicates that Loneliness and Intensity of Social Media Use together can explain 35.2% of the variation in Depression Symptoms. Meanwhile, 64.8% is related to other factors not examined in this study, such as psychological conditions, social relationships, academic pressure, family, sleep patterns, and other factors.

Outlier and Influential Observation Examination

The outlier examination is conducted to determine whether there are data points with excessively extreme values that could affect the regression results. The analysis results show a maximum Standardized Residual value of 4.522. Although there is a relatively high value, the Cook's Distance result is only 0.102 and still far below the general threshold of 1. Thus, there is no indication that a single respondent has a significant impact on the overall model. Therefore, there is not yet sufficient reason to remove respondents solely based on the outlier examination results. Overall, the analysis results indicate that the research instrument has good reliability, while the regression model meets the normality assumption, does not experience disruptive multicollinearity, and does not show autocorrelation issues. The partial test results show that Loneliness has a positive and significant relationship with Depression Symptoms and is the most dominant variable in the model with a Beta value of 0.756. The Intensity of Social Media Use also has a significant relationship with Depression Symptoms, with a negative direction after Loneliness is controlled. However, these results need to be understood with caution because the simple correlation between X2 and Y previously showed a positive direction. Together, Loneliness and Social Media Usage Intensity have a significant relationship with Depression Symptoms, with an F value of 45.971 and a significance of 0.000. The R Square value of 0.352 indicates that these two variables explain 35.2% of the variation in Depression Symptoms, while the remaining 64.8% is related to other factors outside the research model.

Hypothesis Decision Summary Table

Hypothesis	Statement	Result	Decision
$H0_1$	Loneliness is not significantly related to Depression Symptoms.	Sig. 0,000 < 0,05	H0 is rejected.
$H1_1$	Loneliness is significantly related to symptoms of depression.	Sig. 0,000 < 0,05; B = 0,735	H1 accepted
$H0_2$	The intensity of social media use is not significantly related to symptoms of depression	Sig. 0,016 < 0,05	H0 is rejected.
$H1_2$	The intensity of social media use is significantly related to symptoms of depression	Sig. 0,016 < 0,05; B = -0,245	H1 accepted
$H0_3$	Loneliness and the Intensity of Social Media Use simultaneously do not significantly correlate with Depression Symptoms.	Sig. 0,000 < 0,05	H0 is rejected.

$H1_3$	Loneliness and the Intensity of Social Media Use are simultaneously significantly related to Depression Symptoms.	F = 45,971; Sig. = 0,000	H1 accepted

Research Interpretation

Based on the research conducted on 172 students in the city of Medan, this study aims to determine the relationship between loneliness and the intensity of social media use with symptoms of depression. The analysis results show that both variables have a significant relationship with depression symptoms, both individually and collectively. However, loneliness shows a stronger relationship compared to the intensity of social media use.

Interpretation of the Relationship Between Loneliness and Depression

Symptoms The results of the Pearson correlation test show that loneliness has a positive and significant relationship with depression symptoms, with a value of $r = 0.534$ and $p < 0.001$. This means that students with higher levels of loneliness tend to have higher levels of depression symptoms. Conversely, students with lower levels of loneliness tend to have lower levels of depression symptoms. The regression results also show that loneliness has a positive and significant relationship with depression symptoms, with a B value of 0.735, $t = 7.783$, and $p < 0.001$. The Beta value of 0.756 indicates that loneliness is the strongest variable in the research model. Thus, loneliness becomes an important aspect to consider in understanding the symptoms of depression among students. However, these results indicate a statistical relationship and not evidence that loneliness directly causes depression. The results are consistent with the research by Hager, Judah, and Milam, which found that loneliness is related to depression among students. The research explains that loneliness can be related to depression through psychological conditions such as boredom and repetitive negative thinking. Thus, loneliness is not only related to a lack of social interaction but can also be associated with psychological processes that reinforce the emergence of depressive symptoms (Hager et al., 2022). The findings of this study are also supported by research conducted by Shi, Wang, and Zhu on 3,827 students. The longitudinal study found a relationship between smartphone addiction and depressive symptoms and showed that loneliness can be a mediator in that relationship. The findings show that loneliness is an important psychosocial condition in understanding the emergence of depressive symptoms in students (Shi et al., 2023). Thus, the results of this study reinforce the view that social relationship conditions and the feeling of being connected with others are important aspects of students' mental health. However, because this study uses a correlational design, the results cannot be interpreted as loneliness directly causing depression. The relationship found indicates a statistical correlation between the two variables.

Interpretation of the Relationship Between Social Media Usage Intensity and Depression Symptoms

Pearson correlation results show that the intensity of social media usage has a positive and significant relationship with depression symptoms, with an r value of 0.284 and a p value of 0.004. This relationship is lower compared to the relationship between loneliness and depression symptoms. However, after loneliness was included in the regression analysis, the intensity of social media use had a negative and significant coefficient, namely B = -0.245, $t = -2.425$, and $p = 0.016$. This means that in the regression model, after controlling for the influence of loneliness, the intensity of social media use has a negative relationship with depression symptoms. The change in the direction of that relationship needs to be understood carefully. This result does not mean that the more often social media is used, the more certain it is that depression symptoms will decrease. The difference between the correlation and regression results indicates that the relationship between social media and depression symptoms is quite complex and related to the loneliness condition of students.

Interpretation of the Relationship Between Loneliness and Intensity of Social Media Use Simultaneously

The F-test results show an F value of 45.971 with $p < 0.001$. The results indicate that loneliness and the intensity of social media use together have a significant relationship with symptoms of depression. The R Square value of 0.352 indicates that these two variables together can explain 35.2% of the variation in depression symptoms. Meanwhile, the remaining 64.8% is related to other factors not examined in this study, such as academic conditions, family, social relationships, economic pressure, sleep patterns, stress, and other psychological factors.

Interpretation of Dominant Variables and Regression Coefficients

Based on the regression results, loneliness is the most dominant variable in explaining the symptoms of depression. This is evident from the loneliness Beta value of 0.756, while the intensity of social media use has a Beta value of -0.236. In addition, the t-value for loneliness of 7.783 is greater than the t-value for social media usage intensity of -2.425. The results indicate that the condition of loneliness has a stronger correlation with symptoms of depression compared to the intensity of social media use. Therefore, attention to the social conditions and interpersonal relationships of students becomes important in understanding the symptoms of depression. The analysis results in the regression equation $Y = -3.375 + 0.735X1 - 0.245X2$. The loneliness coefficient of 0.735 indicates that an increase in loneliness scores is associated with an increase in depression symptom scores by 0.735, with social media usage intensity held constant. Meanwhile, the social media usage intensity coefficient of -0.245 indicates that an increase in X2 scores is associated with a decrease in depression symptom scores by 0.245 after controlling for loneliness. The coefficient represents a statistical relationship or prediction. Because this study uses a correlational design and does not conduct experiments, the results cannot be used to directly state cause-and-effect relationships.

Interpretation of Model Feasibility and Depression Symptom Levels

The results of the normality test show an Asymp. Sig. value of 0.051 and a Monte Carlo Sig. value of 0.054. Both values are greater than 0.05, so the residuals can be considered normally distributed. Next, the Tolerance value of 0.406 and VIF of 2.461 indicate that there are no multicollinearity issues affecting the model. The Durbin-Watson value of 2.155 also indicates no strong signs of autocorrelation issues. Thus, based on the test results, the regression model can be used to analyze the relationship between loneliness and the intensity of social media use with depression symptoms. The analysis results show that the depression symptom scores have a minimum value of 0, a maximum of 27, and an average of 7.92 with a standard deviation of 5.085. Based on the PHQ-9 score, the average falls into the category of mild depressive symptoms. However, the conditions of each respondent are different. Some respondents have low scores while others have higher scores. Therefore, the PHQ-9 results in this study are used to describe the level of depressive symptoms, not to establish a clinical diagnosis of depression.

Overall Interpretation of Research

Results Overall, the research shows that loneliness has a positive and significant relationship with depressive symptoms and is the most dominant variable in the model. The intensity of social media use also has a significant relationship, but its direction changes from positive in simple correlation to negative after loneliness is controlled in regression. The results indicate that the relationship between social media and depression symptoms cannot be viewed solely based on how long students use social media. Psychosocial conditions, especially loneliness, also need to be taken into account. Together, loneliness and the intensity of social media use explain 35.2% of the variation

in depression symptoms, while the remaining 64.8% are related to other factors outside the study. Thus, loneliness becomes a more important aspect to consider in understanding the symptoms of depression among students in the city of Medan.

Summary Table of Hypothesis Interpretation

Hypothesis	Result	Decision
H1: Loneliness is positively and significantly related to symptoms of depression.	t = 7,783; Sig. < 0,001; β = 0,756	Accepted
H2: The intensity of social media use is significantly related to symptoms of depression.	t = -2,425; Sig. = 0,016; β = -0,236	Accepted
H3: Loneliness and the intensity of social media use simultaneously have a significant relationship with symptoms of depression.	F = 45,971; Sig. < 0,001; R^2 = 0,352	Accepted

The results of the study on 172 students in the city of Medan show that loneliness has a positive and significant relationship with symptoms of depression, with a value of r = 0.534 and p < 0.001, and is the most dominant variable in the model with a Beta value of 0.756. These findings indicate that psychological conditions related to the feeling of lacking adequate social connections are more strongly associated with symptoms of depression compared to the intensity of social media use. The results are consistent with the research by Zhao, Kadir, and Razak, which found that loneliness, family functioning, emotional intelligence, and social support are related to depressive symptoms in students. The research highlights the importance of social relationship conditions and psychological factors in understanding the mental health of students (Zhao et al., 2024). Meanwhile, the intensity of social media use in this study has a positive and significant relationship with depression symptoms in a simple correlation (r = 0.284; p = 0.004), but it turns negative after loneliness is controlled in regression (B = -0.245; p = 0.016). The change in direction indicates that the relationship between social media use and depression symptoms is not straightforward and is likely related to the psychosocial conditions of students. This is in line with Sirtoli's research, which found that the time spent on social media is related to symptoms of depression in students, but this relationship is also associated with other factors that can act as intermediaries (Sirtoli et al., 2024). Another finding from longitudinal research also shows that an increase in problematic social media use can be followed by an increase in symptoms of depression and loneliness, so social media use needs to be distinguished between merely high intensity of use and problematic use (Shannon et al., 2024). Collectively, loneliness and the intensity of social media use are significantly related to depressive symptoms (F = 45.971; p < 0.001) and explain 35.2% of the variation in depressive symptoms, while the remaining 64.8% is related to factors outside the research model. These results are consistent with meta-analysis findings that indicate problematic social media use has a positive relationship with depression and loneliness among students, although the strength of the relationship may vary between studies (Jing et al., 2025). Thus, the results of this study indicate that the symptoms of depression in students cannot be explained solely by the duration of social media use. Loneliness actually shows a stronger relationship, so the quality of social relationships, interpersonal support, and the psychological condition of students need to be considered in understanding the symptoms of depression. The results of this study should also be understood as a statistical relationship, not a cause-and-effect relationship, because the research uses a correlational design. In addition, the average PHQ-9 score of 7.92 indicates mild depressive symptoms descriptively and not a clinical diagnosis.

IV. CONCLUSION

Based on the research results involving 172 students in the city of Medan, it can be concluded that loneliness has a positive and significant relationship with symptoms of depression. The analysis

results show that the higher the level of loneliness, the higher the symptoms of depression experienced by students. Loneliness is also the variable most strongly associated with depression symptoms in this study. The intensity of social media use also has a significant relationship with depression symptoms. However, after being analyzed together with loneliness, the direction of the relationship between the intensity of social media use becomes negative. This indicates that the relationship between social media use and depression symptoms is quite complex and cannot be simply interpreted as social media use directly causing or reducing depression symptoms. Together, loneliness and the intensity of social media use have a significant relationship with symptoms of depression. Both variables are able to explain 35.2% of the variation in depression symptoms, while the remaining 64.8% is influenced by other factors that were not studied. Thus, loneliness is a more dominant factor in the research model, so the social conditions and feelings of loneliness among students need to be considered in understanding the symptoms of depression

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