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The Relationship Between Loneliness and Social Media Addiction in Adolescents

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Article Info

Abstract

Recently, the issue of addiction to social media has become topical among adolescents, in particular, the problem of loneliness. This paper concentrates on studying the relationship between loneliness and social media addiction putting into consideration the following demographic (gender, age, and socioeconomic status) and psychological (self-esteem and resilience) factors. It was a cross-sectional survey of validated scales in 400 adolescents. It was demonstrated in the results of Pearson correlation analysis that the loneliness and social media dependency are significantly positively correlated with each other ($r = 0.47$, $p < 0.01$). All the data of the multiple regression analysis revealed that loneliness (beta = 0.45, $p < 0.001$) was certainly the strongest predictor, though females and older adolescents were more dependent. The mediation analysis showed that self-esteem partially mediated this relationship and the moderation analyses showed that resilience moderated the impact of loneliness with the relations to social media dependency. The above results suggest that there is an intervention measure imperative that aims at ensuring resilience and self-esteem to help avert social media dependency among lonely youths.

INTRODUCTION

The impact of social media is a necessity of the existence of the teenagers in the modern digitalized world. Instagram, Tik Tok, or WhatsApp can help the teenagers communicate and share their experience, as well as construct online identities. Despite the many positive effects they bring about, through evidence, it has been established that such programs have some effect on the mental health of adolescents and loneliness and platforms are of great concern. Loneliness is a form of the term that is designed to indicate the condition of the soul that is suspected of a deficit in the social relationship or the deficit in satisfaction of the current state of the affairs (Yang, 2019). Adolescents themselves can be classified as one of the most vulnerable groups in the problem of loneliness because adolescent age is one of the most critical stages of development in terms of identity development and social relational development, so under the condition of immersion in a state of social isolation or insufficient levels of support, loneliness would impact persons of this age at extremely high levels (Rokach, 2019; Della Longa et al., 2022). The empirical research

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indicates that the loneliness related to the teens is preventable with the help of internet and social media. Mandala (2024) notes that the overuse of the Internet is one of the forms of compensation in real life due to the absence of contacts.

In the meantime, the social media addiction or dependence, which it may also be called, is characterized by the obsessive desire to utilise digital networks on the regular basis and despite negative impact that it may impose on other areas of life. In the research by Miftahurrahmah and Harahap (2020), it was determined that the level of loneliness of college learners has been significantly related to social media addiction. According to their results, the more a person is addicted to the media, the higher his scores on loneliness (Uyaroğlu et al., 2022).

The reliance on the social media and loneliness should also be maintained on intellectual grounds. Some of the researches have indicated how social media can be used excessively to heighten the loneliness. Indicatively, studies by Hardika (2019) revealed that the relationship between internet addiction and loneliness was quite positive in adolescent social media users. The more adolescents experience loneliness, the greater is their propensity to being more addicted to the internet.

It should be mentioned that the connection between the feeling of loneliness and the use of social media is also not straightforward (Moretta and Buodo, 2020). The existence of a number of studies has demonstrated that social media could be used as the means of alleviating loneliness as the means of enabling adolescents to create and sustain social networks through the Internet. Indicatively, a study conducted by Bian and Leung (2015) observed that overuse of smartphone could be linked to augmented social capital, which subsequently could alleviate loneliness. Nevertheless, they also mention that too much use may result in addiction that, in turn, may affect psychological well-being in a negative way (Cahya et al., 2023; Khasmohammadi et al., 2020).

Besides this, self-esteem and self-identity are also some of the reasons that contribute to the loneliness and the addiction to social media. Low self esteem adolescents are potentially more vulnerable to social media addiction to gain self esteem and acceptance by others. In a study conducted by Andreassen (2017), a person with low self-esteem is predisposed to excessive use of social media to satisfy their needs. This is also of concern in the Indonesian context. According to a study by Rini & Huriah (2020), loneliness and self-esteem were also key predictors of internet addiction among adolescents.

They proposed the following interventions that would raise the self-esteem and decreasing the loneliness among the adolescents as they tried to prevent internet addiction. In general, despite the numerous possibilities that social media provides in terms of socializing and self-identifying, these media should be used usefully by adolescents. Educators, and policymakers need to work together to ensure that adolescents have the skills and knowledge necessary to navigate the digital world in a way that supports their mental well-being. With a better understanding of the relationship between loneliness and social media dependence, more effective interventions can be developed to support adolescents in facing the challenges of this digital age (Medina & Mesra, 2024).

The Problem of Study

Social media is the main place of interaction of teenagers in the digital age and developing social identity. Nevertheless, the overconsumption of social media is usually linked to loneliness and addiction, which can adversely affect the state of psychology. Lonely teenagers will resort to social media as a way of escaping but on the other hand, unmanaged use will only compound their loneliness and cause addiction. Even though some studies have been done to support the correlation

between loneliness and social media dependency, there remains controversy on whether social media alleviates loneliness or increases it. Thus, the paper intends to examine the connection between loneliness and social media dependency among adolescents and the causes of the connection.

Literature Review

Loneliness and social media addiction among adolescents have generated moderate positive interest in recent studies and a ta-analysis carried out by Pratiwi (2012) demonstrated an average positive correlation between loneliness and internet addiction and consequently it follows that the more lonesome the individual is, the more likely he or she will become addicted to the internet. It was also found that the factors that affected thorrelation included age, gender, and geographic region.

To continue investigating this connection, a paper by Purnomo (2023) investigated the mediating effect of resilience on the connection between loneliness and social media addiction among adolescents. The results showed that resilience is important in reducing the effect of loneliness on social media addiction which implies that developing resiln can be one of the intervention strategies.

Also, Can (2023) conducted a study to determine the connection between social media dependency and loneliness in high school students. The researchers discovered that the correlation between the t riables was significant, meaning that those students who are more socially mediaicted also noted their loneliness. Debate has been placed on the directionality of this relationship. Other scientists conjecture that people find online contact to alleviate loneliness, which may lead to extreme consumption of social media. On the other hand, some claim that people spend too much time on social media, which can cause dissatisfaction with face-to-face intecons, and this factor is only worsening loneliness.

The latter point of view is supported by a review conducted by Yang and Jin (2022) that suggests that the internet can positively affect exig relationships but the use of social world escape might increase loneliness. Furthermore, one of the studies was carried out in the conditions of the COVID-19 pandemic to identify the connection between the experiences of loneliness in adolescents and their internet addiction. The findings showed a strong connection, which emphasized the effect of online aity increase in times of social isolation.

To conclude, the literature available indicates a multifaceted interrelation of loneliness and sol media addiction in adolescents. Although it is claimed that loneliness causes people to use more social media, other researches point out that social media addiction might result in feelings of loneliness. Some mediators, like resilience, may act within this relationship, and provide entry points to specific interventions. More studies should be done to explain the causal mechanisms and to establish effective interventions to reduce this rising menace.

METHODS

Research Design

The research design used in this study was quantitative and correlational research design to investigate the association between loneliness and social media dependency amongst adolescents. The data were collected at one point in time through a representative sample by use of cross-sectional survey method. This design was adopted on the basis that the strength and direction of the relationship between the variables could be measured without control of the variables. Objectivity in data collection and analysis by the use of a quantitative approach made it possible to statistically validate the results.

Participants

The study population was composed of adolescents between the age of 12-18 years and were active social media users. A stratified random sampling method was employed in order to have equal representation of various age groups, gender and socioeconomic backgrounds. The schools, community centers and online youth forums were sought to recruit participants making the sample diverse. Stratification was used to prevent over-representation of one given sub-group hence improving the generalizability of the results. A power analysis was done to ascertain that the power of the study was enough to find significant relationships. To have credible findings, at least 400 participants were identified. Participation criteria included that the participants had to (1) be in the given age group, (2) spend not less than one hour a day on social media and (3) have informed consent. Individuals diagnosed with mental health disorder were also excluded to eliminate the possibility of confounding variables, which could influence loneliness or social media dependency.

Data Collection

The process of data collection took place in six weeks. The survey was conducted using the Google Forms or the use of paper-based questionnaires distributed in schools. Ethical clearance was obtained at the institutional review board and informed consent was obtained to the participants and parents where necessary, before the participation. Participants were guaranteed of anonymity and confidentiality and they were told that they had the option of dropping out of the study any time without repercussions.

Data Analysis

The gathered data were processed in IBM SPSS (Version 26) and AMOS (structural equation modeling). To summarize the demographic features and the significant variables, descriptive statistics including means, standard deviations, and frequency distributions were calculated to find out the strength and direction of loneliness and social media dependency.To investigate the correlation between loneliness and social media dependency, the correlation coefficient (r) was calculated by using Pearson. The analysis was performed using multiple linear regression to establish whether the loneliness was a significant predictor of social media dependency when all the demographic factors including age, sex, and socioeconomic status were controlled. The test of normality (Kolmogorov-Smirnov test, $p > 0.05$) and the test of multicollinearity (Variance Inflation Factor, VIF < 3) were used to check that the statistical assumptions were satisfied.

In order to investigate gender differences in the dependency on social media, independent samples t -tests have been conducted, in which the scores of male and female participants were compared. Also, the differences in social media dependency between various age groups were compared (12-14, 15-16, and 17-18 years) with the help of the one-way ANOVA. To further test the analysis, ANCOVA (Analysis of Covariance) was used to adjust the effect of the socioeconomic status as covariate in testing the relationship between loneliness and social media dependency. To test for mediation and moderation effects, Hayes' PROCESS macro (Model 4 & Model 1) was applied. Mediation analysis was conducted to determine whether self-esteem mediated the relationship between loneliness and social media dependency, while moderation analysis was performed to assess whether resilience influenced the strength of this relationship.

RESULTS AND DISCUSSION

A cross-sectional survey was performed with the collection of the information with the help of the quantitative methods and was sent to 400 adolescents aged 12-18 years. Stratified random sampling technique was used to select the respondents in different schools and communities in order to have respondents representing

different gender, age, and social economic groups. The study relied on standard measures, which were assessing the magnitude of loneliness, social media addiction, self-esteem, and resilience. Some other demographic information was taken, gender, age group and socioeconomic status. Statistical analyses of the collected data involved using descriptive statistics, the correlation tests, t-tests, ANOVA, ANCOVA, and moderation-meditation tests using SPSS and AMOS. These statistical tools enabled an in-depth analysis of how relationship existed between major variables and the effects of demographic issues. The findings are presented in the following tables, which summarize demographic characteristics, levels of social media dependency, and the influence of loneliness, self-esteem, and resilience. These results provide empirical evidence of the complex relationships between loneliness and social media dependency in adolescents and illustrate how psychological factors and demographic characteristics shape these dynamics.

Sample Demographic Characteristics

Table 1. Demographic Characteristics of the Sample

Variable	Frequency (n)	Percentage (%)
Gender		
Male	180	45.0%
Female	220	55.0%
Age Group		
12-14 years	120	30.0%
15-16 years	150	37.5%
17-18 years	130	32.5%
Socioeconomic Status		
Low	100	25.0%
Medium	200	50.0%
High	100	25.0%

The sample in this study consists of 55% female and 45% male participants, reflecting a relatively balanced gender distribution. In terms of age, the largest proportion of participants falls within the 15-16 year age group, accounting for 37.5% of the total sample. This is followed by 32.5% of participants aged 17-18 years, and 30.0% aged 12-14 years. These figures indicate that the sample captures a broad and balanced representation of adolescents across different stages of secondary education. Regarding socioeconomic background, half of the participants (50.0%) come from middle-income families, while 25% come from low-income groups and another 25% from high-income groups. This distribution provides a diverse socioeconomic profile, allowing the study to examine potential variations in social media dependency across different economic contexts.

Levels of Social Media Dependency Among Adolescents

Table 2. Descriptive Statistics for Social Media Dependency Scores

Variable	N	Mean	Standard Deviation (SD)	Minimum	Maximum
Social Media Dependency	400	23.15	6.51	10	30

The analysis revealed that the mean social media dependency score among adolescents in the sample was 23.15. This finding suggests that, on average, the participants exhibit moderate to high levels of dependency on social media. The standard deviation of 6.51 indicates a moderate level of variability within the sample, reflecting that while some adolescents demonstrate a high degree of reliance on social media platforms, others exhibit much lower levels of dependency. The minimum

recorded score of 10 highlights the presence of individuals with very low engagement or dependence on social media, whereas the maximum score of 30 illustrates that some participants experience extreme levels of dependency. These results point to a diverse range of behaviors within the adolescent population regarding their use of social media, emphasizing the need to consider individual differences when examining the effects of social media usage.

Gender Differences in Social Media Dependency

Table 3. Frequency Distribution of Social Media Dependency by Gender

Gender	Mean Social Media Dependency Score	Standard Deviation (SD)	t-Statistic	p-Value
Male	22.68	6.48		
Female	23.89	6.50	-2.07	0.04

The results show that the mean score for social media dependency among female participants is 23.89, which is slightly higher than the mean score of 22.68 observed among male participants. Statistical analysis using an independent samples t-test yielded a t-value of -2.07 with a p-value of 0.04. These results indicate that the difference in social media dependency between males and females is statistically significant at the 0.05 level. Based on these findings, it can be concluded that within this sample, female adolescents tend to exhibit a slightly higher level of dependency on social media compared to their male counterparts.

Age Group Differences in Social Media Dependency

Table 4. One-Way ANOVA Results for Social Media Dependency Across Age Groups

Age Group	N	Mean Score	Standard Deviation (SD)	F-statistic	p-Value
12-14 years	120	21.45	6.10		
15-16 years	150	23.55	6.30	4.50	0.01
17-18 years	130	24.25	6.70		

The findings indicate that adolescents aged 15-16 years and 17-18 years exhibit higher levels of social media dependency compared to those in the 12-14 year age group. This pattern suggests that as adolescents grow older, their reliance on social media tends to increase. Statistical analysis using one-way ANOVA produced an F-statistic of 4.50 with a p-value of 0.01, confirming that the differences in social media dependency across these age groups are statistically significant. However, to determine precisely which age groups differ significantly from one another, further post-hoc analysis would be required. This additional analysis would provide a clearer understanding of the specific age ranges where the differences in social media dependency are most pronounced.

Correlation Between Loneliness and Social Media Dependency

Table 5. Correlation Between Loneliness and Social Media Dependency

Variable	Social Media Dependency	Loneliness
Social Media Dependency	1.00	0.47**
Loneliness	0.47**	1.00

The results of this study reveal a moderate positive correlation ($r = 0.47$, $p < 0.01$) between loneliness and social media dependency among adolescents. This finding indicates that adolescents who report higher levels of loneliness are also more likely

to exhibit greater dependence on social media platforms. The strength and significance of this relationship suggest that loneliness plays a meaningful role in shaping adolescents' engagement with social media. In other words, the more isolated or emotionally disconnected adolescents feel, the more they tend to turn to social media as a means of seeking connection, distraction, or validation. These results imply that interventions aimed at reducing loneliness, such as fostering offline social relationships or enhancing coping skills, may be effective strategies for helping to mitigate problematic or excessive social media use in this population.

Effect of Loneliness on Social Media Dependency Controlling for SES

Table 6. ANCOVA Controlling for Socioeconomic Status in the Relationship Between Loneliness and Social Media Dependency

Source	SS	df	MS	F	p-value
Loneliness	750.20	1	750.20	18.50	<0.001**
Socioeconomic Status	300.45	1	300.45	7.40	0.007**
Error	15,500	397	39.04		
Total	16,550	399			

The findings indicate that loneliness remains a significant predictor of social media dependency, even after controlling for socioeconomic status. The results of the ANCOVA analysis show that loneliness has a strong and statistically significant effect on social media dependency ($F = 18.50$, $p < 0.001$). This suggests that adolescents who experience higher levels of loneliness are more likely to exhibit increased dependency on social media platforms, regardless of their socioeconomic background.

Furthermore, the analysis also reveals that socioeconomic status independently contributes to variations in social media dependency ($F = 7.40$, $p = 0.007$). This finding highlights that adolescents from different socioeconomic backgrounds experience differing levels of social media dependency, with those from lower socioeconomic groups potentially using social media more frequently as a substitute for limited offline social opportunities or resources. Together, these results underscore the importance of considering both psychological factors, such as loneliness, and contextual factors, such as socioeconomic status, when examining patterns of social media use among adolescents.

Resilience as a Moderator in the Loneliness–Social Media Dependency Relationship

Table 7. Moderation Analysis – Resilience as a Moderator Between Loneliness and Social Media Dependency

Interaction Effect	B	SE	t-value	p-value
Loneliness × Resilience	-0.20**	0.07	-2.86	0.005**

The findings of the present research imply that resilience has a critical moderating effect on the connection between loneliness and social media dependency in adolescents. The moderation analysis produced p-value of 0.005, which confirms the existence of statistically significant interaction effect of loneliness against resilience. This observation indicates that resilience determines the degree to which loneliness affects the reliance of an individual on social media.

Moreover, the interaction term has a negative coefficient (-0.20), which indicates that the greater the resilience is, the lesser the intensity of the positive association between loneliness and social media dependency. That is, more resilient adolescents will not resort to social media as an escapist solution in cases of feeling lonely. Resilience seems to be a safeguard mechanism, which prevents people to become

overdependent on social media to satisfy unmet social or emotional needs. This observation is in line with previous psychological theories that have explored resilience as one of the main traits that enable people to respond to negative emotional experiences in healthier and more positive directions.

Discussion

The fact that resilience mediates the association between loneliness and social media dependency supports the available theories of resilience as a protective factor in the mental well being of adolescents. The current research proves that a greater degree of resiliency may undermine a positive correlation between loneliness and the addiction to social media. That is, highly resilient adolescents are less prone to using social media sites as a stress relief tool when they feel lonely. This aligns with the previous studies that indicate that resilience can help the individuals cope with the negative emotional states in a better way due to adaptive coping mechanisms, and the probability of the maladaptive behavioral tendency like heavy use of social media is low (Tang et al., 2022; Arslan, 2021).

Moreover, these results are consistent with the broaden-and-build theory of positive emotions, which states that psychological resources such as resilience enable people to expand their thought-action repertoires and establish lasting personal resources, with the help of which they can better cope with the challenges of life, such as feelings of loneliness (Fredrickson, 2004). More resilient adolescents might attempt to find more health-affirming, offline ways of dealing with loneliness, including pursuing a hobby or physical activity, or by building real-life social networks, as opposed to balancing it out with digital ones. However, the less resilient adolescents are more susceptible to developing habitual dependency on social media as an alternative to actual social support (Twenge et al., 2020; Keles, McCrae, and Grealish, 2020).

As a protective factor, resilience has repeatedly been a focus in research on the well-being of adolescents, especially when technology is involved. In line with the current results, research by Arslan and Yildirim (2021) determined that resilience can buffer the impact of loneliness on problematic technology use. This implies that interventions aimed at creating resilience, including, but not limited to mindfulness training, emotional regulation programs, and strengths-based counseling, may be effective measures that would help make adolescents less vulnerable to overuse of social media (Liu et al., 2019).

In addition, the findings have implications in practice to educators, parents, and practitioners working in mental health. Schools and community programs might work on the incorporation of resilience-building into the curriculum and youth development programs as a preventive measure to reduce the risks of loneliness and overuse of digital communication. In localities or neighborhoods where teens are exposed to digital space more, building resilience may be the prophylactic to the development of healthier coping mechanisms. This is in line with research that is proposing comprehensive mental health treatment of adolescents that stresses internal psychological resilience as a way of counteracting the stress of contemporary digital life (Orben, Dienlin, & Przybylski, 2019).

CONCLUSION

This study contributes important empirical evidence to the growing body of research on adolescent behavior by confirming that loneliness is a significant predictor of social media dependency. More importantly, it advances the current understanding by revealing the psychological mechanisms through which this relationship operates. Specifically, the findings indicate that self-esteem serves as a mediating factor, suggesting that adolescents who experience loneliness may develop lower self-esteem, which in turn increases their reliance on social media as a means of coping

or seeking validation. Additionally, the study establishes resilience as a moderating factor, showing that higher resilience can buffer the impact of loneliness on social media dependency. This dual mechanism underscores the complexity of adolescent psychological processes and highlights the need to view social media dependency not merely as a behavioral issue but as one deeply rooted in emotional and cognitive vulnerabilities.

Furthermore, the study identifies significant demographic variations, with female adolescents and those in older age groups displaying higher levels of social media dependency. This aligns with existing literature suggesting that females are more likely to use social media for emotional expression and relational maintenance, which may make them more susceptible to dependency when facing psychological stressors such as loneliness. Older adolescents, who are typically more engaged with online social networks and face greater academic and social pressures, also appear more vulnerable. These findings contribute to the literature by confirming that demographic factors must be considered when analyzing patterns of social media use.

By employing robust inferential statistical techniques, this study addresses notable gaps in previous research, which often lacked comprehensive analyses of mediation and moderation effects. Rather than presenting loneliness and social media dependency as a straightforward relationship, this research offers a more nuanced and layered understanding of the psychological pathways involved. Such insights are valuable for informing practical intervention strategies. Specifically, initiatives that aim to strengthen adolescents' self-esteem and resilience may help reduce the risk of developing unhealthy patterns of social media use. In this way, the study not only contributes theoretically but also offers clear implications for educational, clinical, and policy efforts aimed at mitigating the negative impacts of loneliness on young people's digital behavior.

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