

# The Relationship Between Smartphone Addiction and Social Anxiety in Late Adolescents in the Society 5.0 Era

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## ABSTRACT

**Background:** Rapid technological advances in the Society 5.0 era have made smartphones an important part of everyday life. The excessive impact of smartphones results in smartphone addiction, especially in late adolescents who are more vulnerable due to their developmental stage and social influence.

**Objective:** This study aimed to analyze the relationship between smartphone addiction and social anxiety in late adolescents.

**Methods:** This study is a descriptive quantitative study with a correlational research design. The population used in this study were late adolescents aged 18 to 21 years who used smartphones for less than 8 hours per day, > 8 hours - 16 hours per day, and > 16 hours per day at the Faculty of Psychology, Undergraduate Psychology Study Program, State University of Malang in January 2025. The sample in this study was 105 respondents with a simple random sampling technique. The instrument in this study used a questionnaire consisting of: smartphone addiction instruments using SAS-SV.

**Results:** There was a significant positive correlation between smartphone addiction and social anxiety. Adolescents with higher levels of smartphone addiction reported greater symptoms of social anxiety, highlighting the impact of excessive smartphone use on face-to-face social interactions.

**Conclusion:** There is a need for awareness and intervention to reduce the psychological impact of excessive smartphone use in adolescents. Further research needs to explore preventive measures and intervention strategies to reduce smartphone dependence and associated social anxiety.

**Keywords:** Adolescents, smartphone addiction, social anxiety, Society 5.0, technology impact

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## INTRODUCTION

In line with the advancement of science and technology in the Society 5.0 era, smartphones have become an integral part of daily life. This is reflected in the growing number of smartphone users worldwide (Kim et al., 2019). In 2022, China recorded the highest number of smartphone users globally with 910.14 million users, followed by India with 647.53 million, the United States with 249.29 million, and Indonesia in fourth place with over 170

million users (Raihani Aulia, 2024). Additional data shows that Indonesians spend the most time on smartphones averaging over 6 hours per day, followed by Thais at 5.64 hours and Argentinians at 5.33 hours. The widespread and increasing use of smartphones reflects their significant role in various aspects of life (Kim et al., 2019).

The ease of access provided by smartphones allows users to instantly connect to numerous applications and services often leading to excessive use or addiction (Fitryasari et al., 2021). This

addiction not only influences general lifestyle patterns but also has a notable impact on specific age groups particularly adolescents. Adolescents are more vulnerable to smartphone addiction due to ongoing brain development and greater cultural susceptibility to addictive behaviors (Bae, 2017). This vulnerability is further heightened between the ages of 18 and 21, a transitional period when many individuals have graduated from high school and entered college or the workforce. With increased independence and reduced parental supervision they gain greater autonomy in using technology including smartphones (Twenge, J. M., & Martin, 2020).

Studies further emphasize this trend. In South Korea, 30.9% of high school students were reported to be addicted to smartphone (Cha & Seo, 2018). In Turkey, the prevalence was even higher, with 42.4% of students affected (Uzunçakmak, T., Ayaz-Alkaya, S., & Akca, 2022). In Indonesia, a study found that 55.6% of junior high school students were addicted to smartphones (Ulfa Suryani & Yazia, 2023). These findings indicate that digital technology particularly smartphones is not merely a communication tool but has become a central environment for social interaction especially among late adolescents.

In addition, the desire not to be perceived as technologically illiterate is influenced by psychosocial factors such as peer pressure and fear of missing out (FOMO) prompting late adolescents to carry their smartphones everywhere, making them an inseparable part of daily life (Mawitjere, 2017). The freedom of expression provided in cyberspace often contrasts with the anxiety felt during direct interactions where fear of acceptance or rejection by others can lead to social anxiety (Primadina et al., 2019).

According to the DSM-V, social anxiety is defined as a persistent fear and embarrassment in one or more social situations, which is particularly common among adolescents. These feelings can hinder the development and expression of a self-identity aligned with their true personality (Averina & Cahyono, 2023). A study conducted on adolescents living in orphanages revealed that 28% of participants experienced social anxiety at a very high level, 54% at a high level, and the remaining 18% at a moderate level (Sari et al., 2022). Adolescents tend to experience heightened social anxiety when separated from their smartphones or when they lose access to them (Primadina et al., 2019). This indicates that high levels of smartphone use may create habitual behavioral patterns, where individuals rely more on indirect interactions (Imasria Wahyuliamy & Ayu Kumala Sari, 2021).

A preliminary study was conducted with 16 undergraduate psychology students from the Faculty of Psychology, State University of Malang consisting of 13 females (81.3%) and 3 males (18.7%). Using a

questionnaire distributed via Google Forms, the results showed that 11 respondents (68.7%) were in the moderate smartphone addiction category, while the remaining 5 (31.3%) were in the mild category. These findings suggest that smartphone use among late adolescents ranges from moderate to high. The convenience offered by smartphones through numerous features and applications encourages adolescents to use them frequently. Furthermore, developmental characteristics of adolescence, such as curiosity and a desire to explore new information, further reinforce continued smartphone use.

Uncontrolled smartphone use can have negative effects across psychological, physical, social, and academic domains. Psychologically, it may lead to social withdrawal, low self-esteem, and feelings of inadequacy. Physically, it can cause inactivity and visual strain due to prolonged screen exposure. Socially, it reduces face-to-face interactions, while academically, it often leads to procrastination caused by excessive use of social media or gaming, ultimately decreasing academic interest. When assessing respondents' feelings upon losing smartphone access, the results indicated that 10 respondents (62.5%) experienced moderate social anxiety, 4 respondents (25%) experienced mild social anxiety, and 2 respondents (12.5%) experienced severe social anxiety. Individuals with smartphone addiction often present an idealized version of themselves to gain positive social impressions, which may not align with their true identity. This discrepancy can further contribute to social anxiety.

Based on these preliminary findings, it is evident that most respondents are heavily dependent on smartphones and tend to experience mild to severe social anxiety if separated from their devices for less than 24 hours. This phenomenon is important to investigate, as excessive smartphone use appears to increase the risk of social anxiety and leads to avoidance of face-to-face communication. Smartphones are often perceived as a more comfortable medium for interaction, allowing users to socialize without in-person contact. Therefore, based on the above discussion, the researchers are interested in conducting a study aimed at examining the relationship between smartphone addiction and social anxiety among late adolescents in the Society 5.0 era.

## METHODS

This research is descriptive quantitative research using a correlation research design. The population used in this study were late adolescents with an age range of 18 to 21 years who used their smartphone less than 8 hours per day, > 8 hours - 16 hours per day, and > 16 hours per day at the Faculty of Psychology, Undergraduate Psychology Study Program, State University of Malang in January

2025. The sample in this study was 105 respondents with the sampling technique used, namely simple random sampling. There are two variables used in this research, namely the independent variable smartphone addictions while the dependent variable is social anxiety late teens. The instrument in this research uses a questionnaire consisting of: instrument smartphone addictions using the SAS-SV scale by Kwon, et al 2013 which consists of 10 statements. Instrument social anxiety in adolescent using the SAS-A scale by La Greca and Lopez 1998 which consists of 18 statements. There are 3 evaluation indicators namely Fear of Negative Evaluation, Social Avoidance and Distress- New

(SAD-New) dan Social Avoidance and Distress General (SAD-O). Scale Liked used on each instrument with answer choices: score 4 strongly agree; score 3 agree; score 2 disagree; score 1 strongly disagree. Data analysis using tests Pearson correlation with a significance level  $<0.05$ . This research has been conducted an ethical review at the health research ethics committee of Idaman District Hospital of Banjarbaru with number 134/KEPK-RSDI/I/2025 with the statement of ethical exemption.

## RESULTS

**Characteristics of respondents in the study are as follows:**

**Table 1. Distribution of respondents based on gender (n = 105)**

Category	N	%
<b>Gender</b>		
Male	31	29,5%
Female	74	70,5%
<b>Age</b>		
18 years	21	20%
19 years	46	43,8%
20 years	29	27,6%
21 years	9	8,6%

In table 1, the results of respondent identification based on gender characteristics show that out of 105 respondents, most were female, 74 (70.5%). The

majority of respondents in this study were 19 years old, namely 46 (43.8%). The next largest age group was 20 years old, namely 29 (27.6%) respondents.

**Table 2. Distribution of respondents based on smartphone screentime (n = 105)**

Category	N	%
Less than 8 hours/day	30	28,6%
More than 8-16 hours/day	70	66,7%
More than 16 hours/day	5	4,8%

In table 2 below, the results of respondent identification are based on screen time usage smartphone per day, results were obtained from 105 respondents, the most screentime smartphone with a duration of more than 8 – 16 hours/day as many as 70

(66.7%) respondents continued with screentime smartphone less than 8 hours/day as many as 30 (28.6%) respondents, and screentime smartphone with a duration of more than 16 hours/day as many as 5 (4.8%) respondents.

## Analysis of the relationship between smartphone addiction and social anxiety in late adolescents in the society 5.0 era

**Table 3. Kolmogorov-Smirnov normality test**

Variable	Count value	Respondents	Sig.
Smartphone Addiction	0,073	105	0,200
Social Anxiety	0,082	105	0,082

Based on the results of the data analysis in table 3 below, it shows the significance value of Asymp.Sig (2-tailed) of 0.200 which is greater than 0.05 for the variable smartphone *addiction* and 0.082 is greater than 0.05 for the variable social *anxiety*. So,

according to the basis for decision making in the Kolmogorov-Smirnov normality test above, it can be concluded that the data displayed is normally distributed.

**Table 4. Pearson Correlation Analysis**

Variable	Correlation	Significance
Smartphone Addiction	0,259	<i>p value</i> = 0,001
Social Anxiety		<i>p</i> > 0,05

Based on the results of data analysis in table 4 using the test Pearson correlation shows the correlation value between variables smartphone addiction and social anxiety namely 0.259. The interpretation results show that the correlation figure is in the range of 0.20 to 0.399, which means the closeness of the relationship between smartphone addiction and social anxiety is included in the low category. The direction of the sign is positive, meaning the more someone experiences smartphone addiction for social anxiety also getting higher. The Asymp.Sig (2-tailed) value of 0.001 is less than alpha (5%), so this indicates that the variable smartphone addiction and social anxiety has a statistically significant correlation. In conclusion, that variable smartphone addiction and social anxiety has a low, positive and significant relationship.

## DISCUSSION

Based on the results of the research that has been conducted, it was found that the majority of respondents in the study were women. Basically, smartphone addiction is more often experienced by women who are generally used for activities such as chatting, sending messages, blogging, and updating personal pages, in contrast to men who tend to play online games or search for information (Choi, et al., 2015). Recent studies have shown that gender differences have a significant influence on the level of smartphone addiction and social anxiety. Women are more likely to experience addiction because they use smartphones as a medium to fulfill emotional and social needs, such as building interpersonal relationships or coping with loneliness (Cho et al., 2025). This is different from men who use smartphones more for recreational activities such as playing games or searching for information. In the context of social anxiety, women are also known to be more sensitive to social judgment and peer pressure, which contribute to high levels of anxiety (Guo et al., 2025). This trend suggests that psychosocial interventions need to consider a gender-based approach to reduce the risk of addiction and social anxiety.

In addition, self confidence is also a factor where teenage girls at the high school level have lower self-confidence than boys (Santrock, 2018), so women are more encouraged to follow trends through smartphones to overcome feelings of inferiority. Then when viewed in terms of social anxiety, women were found to have a higher average score than men which strengthens the behavioral pattern of using smartphones as an effort to adapt to the social

environment (Kholisa et al., 2024). Social anxiety in teenage girls is higher because they are more concerned with their appearance and behavior compared to teenage boys. This is also supported by the finding that women tend to think more negatively and are less able to make positive interpretations in social interactions compared to men.

Based on data based on age, the majority of respondents in this study were 19 years old. At this stage of development, they are able to control their emotions but are still vulnerable to stress and pressure, especially those related to identity and the future. The process of searching for and forming personal identity. Awareness of health, body image, and sexual relationships also increases (Anggraini, 2022). Based on data on smartphone screen time usage, the majority of respondents who experience smartphone addiction are in the moderate category, which is more than 8-16 hours/day. This relatively high duration of use supports the existence of an addiction pattern, as explained by Haug et al., (2015), that smartphone use of more than 6 hours per day is correlated with an increased risk of addiction. Adolescents who use gadgets for a long period of time tend to have higher levels of addiction, in line with previous research (Fauzi et al., 2019) which found a positive relationship between duration of use and level of addiction.

Late adolescence is a crucial period in the formation of self-identity, emotional management, and decision-making, including in the use of technology. Smartphones are often used as a medium to escape from psychosocial pressures such as academic demands, social expectations, and anxiety about the future (Kim et al., 2019). Duration of smartphone use exceeding 6 hours per day is associated with an increased risk of sleep disorders, decreased cognitive function, and psychological problems such as stress and anxiety (Elhai et al., 2019; Thomée, 2018). In this context, it is important for educational institutions and families to improve digital literacy and time management skills in late adolescents to prevent the negative impacts of excessive smartphone use.

Individuals who are addicted to smartphones tend to have low self-control in using smartphones. In addition, the duration of moderate and high smartphone use can reduce the frequency of direct face-to-face interactions that have the potential to trigger anxiety disorders. This is in line with research conducted by C Joshi, (2023) which shows that uncontrolled smartphone use can have negative impacts on life such as mood swings, a tendency to

isolate oneself, and increased social anxiety. In addition, smartphone addiction can affect mental health by reducing the ability to restrain oneself, increasing impulsive behavior, and triggering anxiety, which ultimately becomes an obstacle in establishing positive relationships, carrying out school activities, and maintaining psychological well-being (Eum, Y., Park, J., & Yim, 2016).

The results of the Pearson correlation analysis revealed that there was a significant positive relationship between smartphone addiction and social anxiety. Although the level of this relationship is relatively low, this finding is in line with research conducted by Primadina et al., (2019) where in their research on high school students, a correlation value of  $r = 0.255$  was obtained. Both of these studies show that the higher the level of smartphone addiction, the greater the likelihood that the individual will experience social anxiety. According to the researcher's assumption, the relationship between smartphone addiction and social anxiety is two-way (reciprocal), namely the higher the social anxiety, the higher the dependence on smartphones. Conversely, the higher the smartphone addiction, the worse the social anxiety. Smartphone addiction increases social anxiety, this happens because avoidance behavior is carried out by adolescent who are addicted to smartphones tend to avoid direct social interactions because they feel more comfortable communicating via text/social media.

Dependence on online validation, they more often seek recognition through likes or comments which can cause anxiety when the response is not as expected. Fear of missing out (FOMO): Excessive anxiety due to fear of being left behind in other people's information or social activities. Social anxiety reinforces smartphone addiction, this is because teens with social anxiety tend to withdraw from real social interactions and turn to the digital world for comfort. They use smartphones as a coping mechanism, creating a cycle of dependency.

The two-way relationship between smartphone addiction and social anxiety creates a maladaptive cycle that is difficult to break. Adolescents with social anxiety tend to seek comfort through low-risk digital interactions, such as social media, but at the same time, dependence on digital interactions worsens their ability to establish real social relationships (Li et al., 2020) Reliance on social validation in the form of "likes" or comments also increases emotional stress, creating affective instability and feelings of insecurity (Chakrabarti, 2024). Therefore, it is necessary to develop intervention programs based on digital wellness and social skills that encourage adolescents to build healthy interactions, both online and offline, in order to reduce the long-term effects of smartphone addiction on mental health.

## Implications

The findings of this study offer crucial implications for the development of preventive interventions tailored to the psychosocial needs of adolescents in the Society 5.0 era. The identified correlation between smartphone addiction and social anxiety suggests that excessive technology use not only affects individual mental health but also disrupts social adaptation and identity formation in late adolescence. This underscores the necessity of cross-sector collaboration among educational institutions, families, and mental health professionals in promoting digital literacy, screen time management, and social skills training as part of adolescent well-being curricula. Moreover, the study advocates for gender-based approaches to enhance the effectiveness of such interventions.

## Limitations and Recommendations

Despite providing significant insights, this study has several limitations. First, the descriptive-correlational design does not permit causal inferences between variables. Second, the sample was drawn from a single higher education institution, limiting the generalizability of the findings to the broader adolescent population. Additionally, other psychosocial variables such as self-esteem, social support, and sleep quality were not examined in depth. Future research is recommended to adopt longitudinal and multivariate designs to explore the dynamic interplay between these factors. Experimental or quasi-experimental studies may also be conducted to evaluate the effectiveness of technology-based interventions, such as digital wellness applications or educational platforms, in reducing social anxiety and promoting healthy social relationships in the digital age.

## CONCLUSIONS

This study shows a significant positive relationship between smartphone addiction and social anxiety in late adolescence, although the strength of the relationship is low. This relationship is bidirectional: social anxiety can encourage smartphone dependence, and excessive use can weaken social anxiety. Females tend to have higher levels of addiction and social anxiety than males. Smartphone use of more than 6 hours per day also poses a greater risk of addiction and has a negative impact on psychological health. Efforts to overcome smartphone addiction and social anxiety in adolescents can be done by increasing digital literacy by educational institutions and families, by instilling an understanding of the wise use of technology and its impact on mental health.

In addition, psychosocial interventions are needed that combine social anxiety therapy and control of gadget use, such as cognitive-behavioral therapy

(CBT) and social skills training. Family and school support are also important in forming healthy digital habits through open communication and screen time management. Strengthening these findings, further research is needed with a longitudinal and observational approach, as well as exploration of other variables such as self-esteem and social support.

### Declaration of Interest

The authors declared no conflict of interest.

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### Authors' Contributions

Anggraini, S. contributed to the conception of the research idea, methodological design, and the analysis and interpretation of data. Hayati, NS. contributed to the initiation of the research topic, data collection, and the drafting of the initial manuscript

### Data Availability

All data utilized in this study, including raw data, analyzed datasets, and supporting documents, are available from the corresponding author upon reasonable request. These data are accessible for replication or further exploration by other researchers in accordance with open science principles and research ethics.

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