

Lailil Fatkuriyah¹, Chae Sun-Mi²¹STIKES dr. Soebandi Jember, Indonesia²College of Nursing and the Research Institute of Nursing Science
Seoul National University, South KoreaCorresponding Author: Lailil Fatkuriyah
Email: lailil.fatkuriyah88@gmail.com

The Relationship among Parenting Style, Self-Regulation, and Smartphone Addiction Proneness in Indonesian Junior High School Students

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Background: Smartphone addiction leads to physical, psychological, and social consequences for users, particularly for adolescent users, as psychological development is still in the process of maturation. Individual and family characteristics are shown to contribute to shaping adolescent's behavior related to smartphone usage. Specifically, perceived parenting style and self-regulation have been reported as significant factors influencing smartphone addiction among adolescents.

Objective: This study aims to identify the relationship among parenting style, self-regulation, and smartphone addiction proneness in Indonesian junior high school students.

Method: This study used a cross-sectional, descriptive study design. Data collection took place in five public junior high schools in Jember from the 7th of January to the 8th of February, 2019. The total sample of this study was 158, purposively asked to fill out three questionnaires: Parental Authority Questionnaire, Self-Regulation Questionnaire, and Smartphone Addiction Proneness Scale. Chi-square test and Pearson's correlation coefficients were used to test the relationship between two variables.

Result: The differences in smartphone addiction proneness between the risk group and non-risk group were significant depending on gender ($p=0.004$), daily smartphone usage time ($p=0.025$), and purpose of smartphone usage ($p=0.001$). A significant negative correlation was found between self-regulation and smartphone addiction proneness ($r= -0.448$, $p=0.001$).

Conclusion: The current study found that 11.4% of junior high school students in Jember-Indonesia were categorized into risk groups for smartphone addiction. Gender, daily smartphone usage time, and purpose of smartphone usage showed significant differences between the risk group and the non-risk group. However, there was no difference in the parenting style of the mother between the two groups. Self-regulation showed a significant association with smartphone addiction.

Keywords: Indonesia, junior high school students, parenting style, self-regulation, smartphone addiction proneness

INTRODUCTION

Smartphones have become an indispensable device for all groups of people, especially adolescents, due to their multipurpose and attractive features. Based on the study by [Husni and Fatulloh \(2016\)](#), involving 1,551 elementary and middle school students in Bandung-Indonesia, approximately 67.4% of participants spent 1-4 hours per day using smartphones. The study showed that 18.6% and 7.7% of students spent 4-8 hours and 8-12 hours per day, respectively. Meanwhile, approximately 6.3% of participants spent more than 12 hours per day.

Although smartphones have countless benefits, many harmful effects are also at stake when they are overused. Furthermore, smartphone usage's increasing frequency and duration are positively linked to a higher risk of smartphone addiction ([Cha & Seo, 2018](#); [Haug et al., 2015](#)). Several studies have reported that smartphone addiction can result in several physical, psychological, and social problems ([Cha & Seo, 2018](#); [Lee et al., 2017](#)).

Several studies found that family environmental factors have an important role in predicting smartphone addiction. Specifically, a positive parenting style characterized by affection, rational explanation, and parents' supervision could reduce smartphone addiction ([Bae, 2015](#)). Meanwhile, a negative parenting style characterized by parental rejection and restriction could increase the level of adolescents' reliance on smartphones ([Bae, 2015](#); [Lian et al., 2016](#)).

Individual characteristics have been considered an essential factor in human development. Thus, adolescents' characteristics should be factored in when determining the extent to which adolescents are affected by their environments ([Bronfenbrenner, 1979](#)). Nowadays, adolescents' use of online space is strongly related to fulfilling their psychosocial development tasks, such as self-identity, self-esteem, and social connection improvement ([Shapiro & Margolin, 2014](#)). [Haug et al. \(2015\)](#) also reported that adolescents tended to utilize their smartphone features suited to their preferences as a way to manage their friendship and academic-related stress. These adolescents' characteristics regarding technological utilization

push adolescents to become firmly attached to their smartphones.

In addition, the failure of self-regulation could increase media usage, which will develop into media addiction ([Osatuyi & Turel, 2018](#)). [Van Deursen et al. \(2015\)](#) showed that a low level of self-regulation increased the risk of smartphone addiction. The combination of the immature self-regulation of adolescents and the above characteristics of adolescents drives smartphone addiction more compared to the other age groups. Adolescents face the troubling impacts of smartphone addiction, deteriorating their future as the nation's next generation. However, studies investigating the correlation of parenting style, self-regulation, and smartphone addiction proneness among adolescents in Indonesia remain limited. Therefore, a study of the relationship among parenting style, self-regulation, and addiction proneness among junior high school students in Indonesia becomes very important.

METHODS

This study was a quantitative study with a cross-sectional approach. The study was conducted from the 7th of January to the 8th of February 2019 in five public junior high schools. Purposive sampling was used to recruit participants for this study. The inclusion criteria in this study were as follows: student in grades 7-9 of junior high school in Jember, smartphone user, living with both parents, and willing to participate in the study. Students who lived with one parent, either mother or father, only, were excluded from the study.

This study utilized the G-power software program version 3.1 to calculate the minimum sample size with a statistical correlation test. This study's significance levels, effect size, and power are 0.05, 0.25, and 0.8, respectively. This study's significance and power levels were based on a previous similar study by [Lee, Chae, Bang, and Choi \(2015\)](#). By counting for missing values and withdrawal, a missing rate of 20% was set. A total of 158 eligible junior high school students participated in this study.

Data were collected using three questionnaires. The first questionnaire was the Smartphone Addiction Proneness Scale (SAPS), consisting of 15 items ranging from 1 (strongly disagree) to 4 (strongly agree). Smartphone addiction proneness is classified as follows: high-risk group (total score ≥ 45), potential-risk group (total score = 42-44), and non-risk group (total score ≤ 41). Only two categorizations of smartphone addiction proneness were used in the study, including non-risk and risk groups (Kim et al., 2014).

Since there is no reliable and valid instrument for measuring smartphone addiction proneness in Bahasa Indonesia, the translation and content validity process were conducted using five stages of cross-cultural adaptation of self-report measurement guideline (Beaton et al., 2000).

The SAPS-Indonesian version was reviewed by three experts to assess the content validity. Content validity index (CVI) was calculated for item-level CVI (I-CVI) and scale-level CVI (S-CVI). In this study, all of the items of the SAPS-Indonesian version produced an I-CVI of 1.00, indicating an excellent value. The S-CVI was 1.00, reflecting an excellent validity of the overall scale. The reliability test of SAPS was conducted as well, following the process of cross-cultural adaptation. The reliability test of the SAPS-Indonesian version involving 158 participants was verified with an overall Cronbach's alpha value of .79, indicating an acceptable internal consistency.

Parental Authority Questionnaire (PAQ) was used to measure adolescents' perceived parenting style. The Parental Authority Questionnaire (PAQ) Indonesian version developed by Tamami (2011) included father and mother versions. Only the PAQ of the mother-Indonesian version was used in this study. It consisted of 27 items, where each item was scored on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The items were categorized into three subscales, including authoritative, authoritarian, and permissive parenting styles. Cronbach's alpha coefficient of the PAQ of the Mother version in this study was .86. Each parenting style was later classified into three categories based on the mean score and standard deviation.

Self-regulation was measured using the Self-Regulation Questionnaire (SRQ) Indonesian version developed by Restuti (2016). The SRQ Indonesian

version consisted of 23 items, and each item was scored on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree) for favorable items. Unfavorable items were scored in reverse. Cronbach's alpha coefficient of the SRQ-Indonesian version in this study was .83. A higher total score of the SRQ indicated higher self-regulation ability.

This study has passed the ethical clearance from the Universitas Muhammadiyah Yogyakarta (UMY) with ethical number 622/EP-FKIK-UMY/XII/2018. This study has also obtained research permits from the National Political and Society Protection Board (*Badan Kesatuan Bangsa dan Politik/BAKESBANG*) and the Office of Education of Jember Region.

As the age of the participants was less than 18 years, the students who agreed to participate in the study received two informed consent forms, including student assent and parents' consent forms. Since the researcher did not meet the parents directly, the parents' consent forms were enveloped and sealed. The students were then asked to deliver that form to their parents. The students and their parents had a week to read and sign the consent forms. Only those who submitted both the participant's assent form and parental informed consent form were included in the study.

RESULTS

As presented in Table 1, out of the 158 participants, 88.6% ($n=140$) were identified as a non-risk group for smartphone addiction, and 11.4% ($n=18$) were classified as a risk group. Among 18 participants in the risk group, five participants were classified into the high-risk group, while 13 participants were classified as a potential-risk group.

To identify the differences in smartphone addiction proneness according to individual and family characteristics of participants between the non-risk group and the risk groups, the Chi-square test and Fisher's exact test were performed. As evidenced from Table 2, smartphone addiction proneness was significantly different based on some individual characteristics of participants, including gender ($p=0.004$), daily smartphone usage time ($p=0.025$), and purpose of smartphone usage ($p=0.001$).

A Pearson's correlation coefficient was performed to identify the relationship between self-regulation

and smartphone addiction proneness. A negative correlation was found between self-regulation and smartphone addiction proneness ($r=-0.448$, $p<0.001$). It indicated that the higher the self-regulation is, the lower the participant's risk of becoming addicted to a smartphone will be. Conversely, the lower the self-regulation is, the higher the participant's risk of becoming addicted to smartphones will be.

DISCUSSION

The prevalence of smartphone addiction proneness in this study was 11.4%. There is no survey nationally representing smartphone addiction in Indonesia. Thus, comparing this finding to the current situation in Indonesia becomes quite challenging. However, this finding should be considered an important issue that needs more serious attention from relevant institutions to establish strategies to overcome these phenomena.

Individual characteristics of adolescents, including gender, daily smartphone usage time, and purpose of smartphone usage, showed significant differences between the risk group and the non-risk group. Most participants in the risk group were female, whereas most participants in the non-risk group were male. In supporting the current study's finding, previous studies showed that smartphone addiction had been more prevalent among female adolescents ([Lee et al., 2017](#)). Another study reported that females exhibited 2.7 times more risk of smartphone addiction than males ([Lee et al., 2017](#)). It might be because female adolescents were more disposed to use smartphones for social purposes, such as maintaining a social relationship with their valued people, prompting greater utilization of various communication services of the smartphone, such as chatting, texting, and accessing Social Networking Sites (SNSs) ([Chiu et al., 2013](#)). Meanwhile, playing online games was the main predictor of smartphone addiction among males ([Chen et al., 2017](#)). This finding implied that prevention and intervention strategies to overcome and reduce smartphone addiction among adolescents should be implemented by considering the gender perspective on smartphone use.

Daily smartphone usage time is found to be significantly different between the two groups.

Most participants in the risk group spent more than four hours on smartphone use, while most participants in the non-risk group spent less than four hours. Some previous studies supported this finding. According to [Haug et al. \(2015\)](#), [Aljomaa et al. \(2016\)](#), and [Hussain et al. \(2017\)](#), longer duration on smartphone use strongly predicted smartphone addiction, whereas shorter smartphone usage time negatively affected smartphone addiction ([Cha & Seo, 2018](#)). As junior high school students are still dependent on their parents and interact with their parents mostly in daily life, this finding emphasized a need of supporting parents in providing clear rules and time limits on daily smartphone use to their children.

Among other smartphone content, including music, online games, and streaming video, Social Networking Sites (SNSs) were frequently used among adolescents. SNS was revealed to have a more significant effect on smartphone addiction than the effect of game use ([Jeong et al., 2016](#)). The first reason why SNS exhibits the most substantial effect on addiction is that, once people access SNS, they can also access various entertainment applications, such as online games, videos, and music ([Kuss & Griffiths, 2017](#)). Second, SNS enables people to either maintain relationships or create new connections with others from different areas across the world, something that cannot be done with other content on a smartphone ([Frehat & Abu-Shanab, 2014](#)). Third, people nowadays tend to use SNS applications to send messages or make online calls rather than making conventional phone calls and messages, which require additional costs ([Salehan & Negahban, 2013](#)). These aforementioned benefits of SNS pull more adolescents to become engaged in SNS application, contributing to excessive smartphone use. As a result, the more frequently adolescents use SNS is, the longer time they spent on smartphone use will be. It later increases the vulnerability to smartphone addiction. This finding, hence, proved that educational programs on good practices for using smartphones and SNS are necessary with the goals that adolescents will be able to develop a healthy utilization of such communication tools.

The two groups showed a significant difference regarding the purpose of smartphone use. Getting

new information and communicating with people were the two most essential motives in using smartphones in the non-risk group. Meanwhile, participants in the risk group mostly used their smartphones for seeking fun and regulating mood. These findings were in line with a previous study in which students who showed minor addiction to smartphones were more likely to use their smartphones for communication and information-seeking. Meanwhile, students who were dominantly using their smartphones to seek enjoyment and regulate their mood showed more significant addiction to smartphones (Zhang et al., 2014). It might be because behaviors that produce feelings of fun and enjoyment are more likely to raise our motivation to keep doing the same behaviors (Song et al., 2004). Therefore, when smartphone users experience a better feeling and obtain pleasure when using smartphones, they are more likely to get addicted to smartphones. This result can be used to develop health education programs related to healthy smartphone use for the risk group by including fun and attractive activities such as game-based learning, quizzes, and competition to improve the engagement of adolescents in the programs.

Both groups showed no difference in smartphone addiction proneness depending on perceived family socioeconomic status. Regarding the parents' education level, either the father's or the mother's education level appeared to not be statistically different between the two groups. Akin to this study, Cha and Seo (2018) found that family income and parents' education were not significantly related to smartphone addiction proneness among Korean middle school students. Similarly, Kumcagiz and Gunduz (2016) showed no significant difference in the mean scores of smartphone addiction among university students based on family economic background. Furthermore, Cha and Seo (2018) argued that, since a smartphone provides various content tailored to the individual's needs and interests, individuals from any level of socioeconomic status would easily find content in which they were interested or satisfy their needs. This finding demonstrated that, due to smartphones' convenient and multifarious functions, adolescents from families with different levels of socioeconomic status might have a similar risk of smartphone addiction.

Another variable reflecting the family characteristic of participants in this study was the mother's parenting style. In this study, there was no difference in smartphone addiction based on mothers' parenting styles between the two groups. On the other hand, Bae (2015) and Yoo and Kim (2015) reported that authoritarian and permissive parenting styles were significantly associated with smartphone addiction among adolescents. This finding may suggest using another measurement tool that can identify the parenting style of Indonesian mothers more accurately.

Self-regulation showed a significant negative correlation with smartphone addiction proneness among Indonesian junior high school students. This finding was in line with some recent studies which revealed that self-regulation was an essential factor in smartphone addiction. Ching and Tak (2017) stated that people having higher self-regulation skills became more aware of the rationale and the desired outcome of certain behaviors and had more worthwhile life goals. As a result, they were less likely to use smartphones uncontrollably. Kim et al. (2016) also stated that the level of self-regulation ability could also reflect an individual's capacity to delay satisfaction. Individuals with a high sense of self-regulation would demonstrate higher self-discipline, a higher focus on long-term goals, and a greater capability to delay short-term gratification. Therefore, those people showed a low tendency to attain the temporary satisfaction which smartphones can provide (Ching & Tak, 2017). Ching and Tak (2017) and Gökçearsan et al., (2016) reported that students with lower self-regulation abilities were more likely to exhibit an addictive use of smartphones. It may be because individuals with poor self-regulation showed a low capability to avoid distractors and could not focus on their works (Ramzi & Saed, 2019). Therefore, it seems necessary to facilitate adolescents in developing a higher self-regulation ability related to smartphone use.

Even though this study provides some contributions regarding smartphone use patterns and smartphone addiction proneness in Indonesian adolescents, it has a limitation that should be considered. This study only involved 158 junior high school students from one city in Indonesia. The number of students who participated in this study was very few compared to the total adolescents in Indonesia.

CONCLUSION

Individual characteristics of adolescents, including gender, daily smartphone usage time, and purpose of smartphone usage, showed significant differences between the risk group and the non-risk group.

Family socioeconomic and parent education level, which reflected the family characteristics in this study, had no differences in the two groups. The result of the bivariate analysis showed a significant association between self-regulation and smartphone addiction proneness. This present study provides meaningful information about the prevalence of smartphone addiction proneness in Indonesia and the individual factors contributing to smartphone addiction proneness. This study can initiate other research in Indonesia focusing on similar issues, which could subsequently discover an effective nursing intervention in reducing smartphone addiction among children and adolescents. This study also suggests that the Indonesian government should establish a national prevention program related to smartphone addiction integrated into the school curriculum.

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AUTHOR CONTRIBUTION

First author: Designing the study, carrying out the data collection, performing a statistical test, and writing the manuscript

Second author: Providing advice and guidance for conducting appropriate research, Monitoring and supervising the progress of the study

CONFLICT OF INTEREST

No existing or potential conflict of interest relevant to this article was reported

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Table 1. Smartphone Addiction Proneness of Junior High School Students (n=158)

	Risk group (n=18)	Non-risk group (n=140)	Total (n=158)
Risk group	18 (11.4%)	140 (88.6%)	
High-risk group	5 (3.2%)		
Potential-risk group	13 (8.2%)		
Total score M (SD)	44.17 (2.89)	33.42 (4.82)	34.65 (5.76)

Table 2. Differences in Smartphone Addiction Proneness by Individual and Family Characteristics (n=158)

Personal and Family Characteristics	Category	Non-risk group (n=140)	Risk group (n=18)	χ^2	p
		n (%)	n (%)		
Age (years)	12-13	59 (89.4)	7 (10.6)	0.978	0.613
	14-15	75 (87.2)	11 (12.8)		
	>15	6 (100.0)	0 (0.0)		
Gender	Male	67 (97.1)	2 (2.9)	2.575	0.004 [†]
	Female	73 (82.0)	16 (18.0)		
Grade	7	48 (90.6)	5 (9.4)	2.575	0.276
	8	55 (91.7)	5 (8.3)		
	9	37 (82.2)	8 (17.8)		
Smartphone Ownership	Personal	134 (88.2)	18 (11.8)	4.992	1.000 [†]
	Shared	6 (100)	0 (0.0)		
Daily Smartphone Usage Time (hours)	≤4	78 (94.0)	5 (6.0)	4.992	0.025
	>4	62 (82.7)	13 (17.3)		
Purpose of Smartphone Usage	Getting New Information and Communicating with People	90 (95.7)	4 (4.3)	1.975	0.001 [†]
	Seeking Fun and Regulating Mood	50 (78.1)	14 (21.9)		
Most Frequently Used Content of Smartphone	Social Network Sites (SNS)	96 (86.5)	15 (13.5)	2.296	0.276 [†]
	Others (music, online game, streaming video)	44 (93.6)	3 (6.4)		
Family's Socioeconomic Status	Low	6 (100.0)	0 (0.0)	2.612	0.373
	Moderate	126 (87.5)	18 (12.5)		
	High	8 (100.0)	0 (0.0)		
Father's Education Level	Elementary School	13 (100.0)	0 (0.0)	2.612	0.271
	High School	74 (89.2)	9 (10.8)		
	University or higher	53 (85.5)	9 (14.5)		
Mother's Education Level	Elementary School	14 (100.0)	0 (0.0)	5.012	0.082
	High School	72 (85.7)	12 (14.3)		
	University or higher	54 (90.0)	6 (10.0)		
Permissive Parenting Style	Low	20 (100.0)	0 (0.0)	0.282	0.868
	Medium	98 (85.2)	17 (14.8)		
	High	22 (95.7)	1 (4.3)		
Authoritarian Parenting Style	Low	25 (86.2)	4 (13.8)	1.187	0.552
	Medium	94 (89.5)	11 (10.5)		
	High	21 (87.5)	3 (12.5)		
Authoritative Parenting Style	Low	21 (95.5)	1 (4.5)	1.187	0.552
	Medium	98 (87.5)	14 (12.5)		
	High	21 (87.5)	3 (12.5)		