

ORIGINAL RESEARCH

The influence of sub-factors of smartphone addiction on suicidal ideation among adolescents: focusing on the moderating effect of gender

Kyu-Hyoung Jeong¹, Dohun Song^{1,*}, Jiwon Kim¹, Geonwoo Jeon¹, Heeran J. Cho²

¹Department of Social Welfare, Jeonbuk National University, 54896 Jeonju, Republic of Korea

²School of Global Studies, Kyungwoon University, 39524 Gumi, Republic of Korea

***Correspondence**

dhsong417@jbnu.ac.kr
(Dohun Song)

Abstract

Background: Smartphone addiction has been identified as a critical mental health issue among adolescents, potentially influencing suicidal ideation. This study investigates the influence of four sub-factors of smartphone addiction on suicidal ideation, with a particular focus on the moderating role of gender. **Methods:** Data were drawn from the sixth wave (2023) of the Korean Children and Youth Panel Survey, a nationally representative dataset. A total of 4425 middle and high school third-grade students were included in the analysis. Smartphone addiction was measured using the Smartphone Addiction Proneness Scale (SAPS), which comprises four sub-factors: daily life disturbance, virtual world orientation, withdrawal, and tolerance. Multiple regression analyses were conducted to assess the relationships between these sub-factors and suicidal ideation, and to examine the moderating effect of gender. **Results:** All four sub-factors significantly predicted suicidal ideation. Daily life disturbance, virtual world orientation, and withdrawal were positively associated with suicidal ideation, while tolerance was negatively associated. Although gender had no direct effect on suicidal ideation, it significantly moderated the relationship between tolerance and suicidal ideation. Specifically, higher levels of tolerance were linked to lower suicidal ideation in male adolescents but to higher suicidal ideation in female adolescents. **Conclusions:** The findings highlight the importance of gender-sensitive approaches in addressing smartphone addiction among adolescents. Tailored interventions based on gender-specific risk patterns may enhance the effectiveness of suicide prevention strategies. Nonetheless, the use of a single-item measure for suicidal ideation and the limited inclusion of control variables due to the nature of secondary data are considered important limitations of this study.

Keywords

Smartphone addiction; Suicidal ideation; Adolescents; Gender differences; Tolerance; Moderation analysis

1. Introduction

Adolescence is a transitional stage before entering adulthood, marked by rapid physical, cognitive, and emotional changes, making balanced development especially important [1]. During this period, adolescents strive to establish their identity and pursue autonomy while being significantly influenced by various social relationships [2]. However, the process of adapting to a rapidly changing environment may cause imbalances, increasing stress and psychological instability [3]. Negative emotions such as depression, anxiety, and loneliness induced by these factors are closely related to suicidal ideation [4]. Additionally, the suicide of public figures with significant social influence—such as celebrities, influencers, and politicians—has been widely disseminated through media, negatively affecting adolescents [5, 6].

According to suicide statistics among Organisation for Economic Co-operation and Development (OECD) member countries, the number of suicide deaths among Korean adolescents (ages 9–24) reached an all-time high of 985 in 2021, slightly decreased to 884 in 2022, but rose again to 931 in 2023 [7]. These trends highlight the need to approach the issue of adolescent suicide from a long-term perspective [8] and underscore the necessity of further research into its related factors [9].

Suicidal ideation refers to thinking about, considering, or planning suicide [10]. Adolescents' suicidal ideation varies by age [11, 12], and in recent years, smartphone use, and addiction have emerged as significant risk factors for suicidal thoughts [3, 13–17]. The advent of smartphones has enabled constant internet access regardless of location, offering positive benefits such as information sharing, self-expression, and the formation

of social support networks [18, 19]. However, excessive smartphone use is increasingly recognized as a contributor to psychological vulnerability, which may elevate the risk of suicide [3, 17]. Indeed, adolescents with high levels of smartphone overdependence have been reported to experience comorbid symptoms such as depression, anxiety, sleep disturbances, and academic difficulties, all of which are associated with an increased risk of suicidal ideation [15, 20, 21]. In this context, smartphone addiction is regarded not merely as a form of technological dependence, but as a serious threat to adolescents' overall mental health.

According to the 2024 Smartphone Overdependence Survey by the Ministry of Science and ICT (Information and Communications Technology) and the National Information Society Agency (NIA) [22], adolescents were the only age group that showed an increase in the proportion of individuals at risk of overdependence, rising from 40.1% in 2022 to 42.6% in 2024. Given the growing severity of smartphone addiction among adolescents—a potential predictor of suicidal ideation—this study aims to examine the influence of smartphone addiction on suicidal ideation.

Unlike conventional mobile phone addiction, smartphones offer personalized features and are used across diverse areas such as gaming, finance, education, communication, and productivity, thereby presenting unique characteristics. Accordingly, it has been proposed that the concept of smartphone addiction should reflect these specific features, and it has been classified into sub-factors such as daily life disturbance, virtual world orientation, withdrawal, and tolerance [23]. Daily life disturbance refers to difficulties in home, school, or social relationships. Virtual world orientation describes a tendency to prefer smartphone use over face-to-face interactions, and in severe cases, smartphones may become central to an individual's life. Withdrawal refers to feelings of anxiety or restlessness when a smartphone is not available, and tolerance refers to a growing dependency in which satisfaction is no longer achieved despite excessive use [23].

While the strong association between smartphone addiction and suicidal ideation has been the subject of active research, prior studies have primarily focused on the overall impact of smartphone addiction on suicidal ideation [24–29], and few have examined this relationship by distinguishing between sub-factors of smartphone addiction. Given that smartphone addiction is a complex and multifaceted construct, a more nuanced approach—analyzing its sub-factors—can offer a clearer understanding of its relationship with suicidal ideation.

Meanwhile, previous research has shown that the factors influencing suicidal ideation among adolescents vary by gender. For example, in males, factors such as a history of suicide attempts, smoking, parental alcohol abuse, and poor communication with peers have been identified as significant, whereas in females, sexual orientation, low self-esteem, and experiences of bullying have emerged as key contributors [27]. In a study by Kwon *et al.* [30], age, socioeconomic status, sexual experience, and recovery from fatigue were significant predictors among male adolescents, while academic performance, physical activity, and smoking rates were significant among females. Furthermore, the 2024 Survey on the Human Rights of Children and Adolescents reported that 22.9% of

male adolescents and 39.1% of female adolescents responded, “I want to die”, indicating gender-based differences in the levels of suicidal ideation [31].

Differences by gender are also evident in smartphone addiction. According to Lee & Kim [32], social anxiety—a reinforcing factor for smartphone overdependence—showed a significant moderating effect among females but not among males. Conversely, impulsivity had a significant effect among males but not females. This suggests that both suicidal ideation and its predictive factors, such as smartphone addiction, exhibit gender-specific patterns [29, 30, 33, 34], emphasizing the importance of approaching the issue with a focus on gender differences.

However, previous studies on adolescent suicide and smartphone addiction have largely focused on individual (physical and psychological), family, and school-related factors, while research exploring the influence of smartphone addiction sub-factors on suicidal ideation and gender-based differences remains limited. Therefore, the present study seeks to investigate the relationship between smartphone addiction sub-factors—daily life disturbance, virtual world orientation, withdrawal, and tolerance—and suicidal ideation among adolescents, focusing on the moderating role of gender. This study aims to contribute to a broader understanding of adolescent smartphone addiction and suicide, thereby informing the development of more effective, gender-sensitive intervention strategies.

The research questions guiding this study are as follows:

Research Question 1: How do the sub-factors of smartphone addiction (daily life disturbance, virtual world orientation, withdrawal, and tolerance) affect suicidal ideation among adolescents?

Research Question 2: Does gender moderate the relationship between the sub-factors of smartphone addiction and suicidal ideation in adolescents?

2. Method

2.1 Data

This study utilized data from the sixth wave (2023) of the Korean Children and Youth Panel Survey (KCYPs), conducted by the National Youth Policy Institute. The KCYPs is among the most representative longitudinal surveys on Korean youth. It aims to provide foundational data for academic research and policy development by systematically tracking the growth and developmental changes of children and adolescents in Korea.

The sample for the KCYPs was extracted using a multistage stratified cluster sampling method, targeting fourth-grade elementary and first-grade middle school students nationwide in the first wave (2018). A total of 5197 participants completed the initial survey (2607 elementary school fourth graders and 2590 middle school first graders). The survey was conducted via face-to-face interviews using tablet Personal Computers (PCs) over approximately three months, from August to November 2023.

This study was approved by the Institutional Review Board (IRB) of Jeonbuk National University (JBNU IRB 2025-04-028), and the study procedures were conducted in accordance

with the Declaration of Helsinki. As this research used only aggregated, de-identified secondary data that are publicly available, informed consent from individuals was not required.

For the purpose of this study, data from the sixth wave were used, focusing on third-grade middle school and third-grade high school students. After excluding cases with missing values for key variables, the final analytical sample comprised 4425 adolescents (2219 middle school students and 2206 high school students).

2.2 Variables

(1) Independent Variable: Smartphone Addiction

The independent variable in this study is smartphone addiction among adolescents. The measure was based on the SAPS developed by Kim *et al.* [23], as employed in the KCYPS. The SAPS includes a total of 15 items categorized into four sub-factors: daily life disturbance (5 items), virtual world orientation (2 items), withdrawal (4 items), and tolerance (4 items). Each item is rated on a 4-point Likert scale (1 = Not at all true, 2 = Somewhat not true, 3 = Somewhat true, 4 = Very true).

For this study, the mean score of each sub-factor was calculated and used in the analysis, with higher scores indicating a higher level of smartphone addiction. The internal consistency of the scale in the present sample was acceptable, with a Cronbach's alpha of 0.851.

(2) Dependent Variable: Suicidal Ideation

The dependent variable is suicidal ideation, measured by the item "I feel like I want to die". Responses were rated on a 4-point Likert scale (1 = Not at all true, 2 = Somewhat not true, 3 = Somewhat true, 4 = Very true).

(3) Moderator and Control Variables

The moderating variable in this study is gender, coded as a dummy variable (0 = male, 1 = female). The control variable is school grade, with middle school third graders coded as 0 and high school third graders coded as 1.

2.3 Statistical analysis

To examine the effects of sub-factors of smartphone addiction on suicidal ideation among adolescents, the following analytic procedures were conducted using Stata 15 SE (StataCorp LLC, College Station, TX, USA). First, Cronbach's alpha was calculated to assess the reliability of the measurement scales. Second, frequency analysis was performed to identify the demographic characteristics of the participants. Third, independent samples *t*-tests were conducted to examine gender differences

in the main study variables. Fourth, a correlation analysis was conducted to examine potential multicollinearity among the key variables prior to the main analysis. Finally, multiple regression analyses were conducted to examine the effects of smartphone addiction sub-factors on suicidal ideation and to assess the moderating role of gender in these relationships.

3. Results

3.1 Sociodemographic characteristics of the participants

The total number of participants included in this study was 4425. Of these, 2290 (51.8%) were males and 2135 (48.2%) were females, indicating a relatively balanced gender distribution. Regarding grade level, 2219 participants (50.1%) were in the third grade of middle school, and 2206 participants (49.9%) were in the third grade of high school.

3.2 Gender differences in key variables

An independent samples *t*-test was conducted to examine gender differences in the main study variables. Among the sub-factors of smartphone addiction, virtual world orientation ($p < 0.05$), withdrawal ($p < 0.05$), and tolerance ($p < 0.01$) showed significant differences by gender, whereas daily life disturbance did not. Specifically, males reported significantly higher levels of virtual world orientation and withdrawal, while females scored higher on tolerance. No significant gender difference was observed in suicidal ideation. However, the analysis of Cohen's *d* indicated that all effect sizes were approximately 0.1, reflecting minimal practical significance despite statistical significance. This suggests that while the results are robust due to the large sample size ($n = 4425$), their applicability in real-world contexts may be limited and should be interpreted with caution.

3.3 Correlations among key variables

To examine potential multicollinearity among the key variables, a correlation analysis was conducted (Table 1). Suicidal ideation showed significant positive correlations with all four sub-factors of smartphone addiction—daily life disturbance, virtual world orientation, withdrawal, and tolerance ($p < 0.001$). Significant positive correlations were also observed among the sub-factors of the SAPS (Smartphone Addiction Proneness Scale) ($p < 0.001$). As none of the correlation coefficients exceeded an absolute value of 0.7, multicollinearity was not considered a concern.

TABLE 1. Correlations among suicidal ideation and sub-factors of smartphone addiction.

	Suicidal ideation	Daily life disturbance	Virtual world orientation	Withdrawal	Tolerance
Suicidal ideation	1				
Daily life disturbance	0.153***	1			
Virtual world orientation	0.222***	0.411***	1		
Withdrawal	0.178***	0.481***	0.608***	1	
Tolerance	0.101***	0.610***	0.350***	0.440***	1

Note. *** $p < 0.001$.

3.4 Analysis of the research model

A multiple regression analysis was conducted to examine how the sub-factors of smartphone addiction influence suicidal ideation among adolescents and whether these relationships are moderated by gender. All sub-factors were entered simultaneously into a single regression model (Table 2). The explanatory power of the model for the dependent variable, suicidal ideation, was 12.9% ($R^2 = 0.129$), and the model was deemed statistically significant ($F = 27.690, p < 0.001$).

The control variable, school grade ($B = 0.028, p > 0.05$), did not have a statistically significant effect on suicidal ideation. Among the independent variables, all four sub-factors of smartphone addiction—daily life disturbance ($B = 0.110, p < 0.01$), virtual world orientation ($B = 0.214, p < 0.001$), withdrawal ($B = 0.106, p < 0.01$), and tolerance ($B = -0.085, p < 0.01$)—showed significant associations with suicidal ideation. Specifically, higher levels of daily life disturbance, virtual world orientation, and withdrawal were associated with higher levels of suicidal ideation, whereas lower levels of tolerance were associated with increased suicidal ideation.

Gender, as a moderating variable ($B = 0.103, p > 0.05$), did not have a significant main effect on suicidal ideation. Among the interaction terms, only the interaction between tolerance and gender ($B = 0.103, p < 0.05$) was statistically significant, indicating that gender significantly moderated the relationship between tolerance and suicidal ideation.

To further examine the moderating effect of gender in the relationship between tolerance and suicidal ideation, a graph was created to illustrate the interaction (Fig. 1). The analysis revealed that the association between tolerance and suicidal ideation varied by gender. Specifically, among male adoles-

cents, higher levels of tolerance were associated with lower levels of suicidal ideation. In contrast, among female adolescents, higher levels of tolerance were linked to higher levels of suicidal ideation.

4. Discussion

The purpose of this study was to examine the effects of sub-factors of smartphone addiction on suicidal ideation among adolescents, with a particular focus on the moderating role of gender. For this purpose, data from the sixth wave (2023) of the Korean Children and Youth Panel Survey (KCYPs) were utilized, and a total of 4425 adolescents—2219 in the third grade of middle school and 2206 in the third grade of high school—were included in the analysis.

The main findings of the study are as follows. First, gender differences in key variables were examined. Results showed that male adolescents reported higher levels of virtual world orientation and withdrawal, while females scored higher on tolerance. These findings are consistent with previous studies [26], which indicated that smartphone addiction not only increases suicidal ideation among adolescents but also leads to impairments in daily functioning. In particular, the findings suggest that the patterns of smartphone addiction may differ by gender. However, existing research comparing specific characteristics of addiction by gender remains limited and insufficient. Therefore, this study provides foundational data for a more nuanced understanding of gender-specific patterns in smartphone addiction among adolescents.

Second, the multiple regression analysis revealed that all sub-factors of smartphone addiction significantly influenced suicidal ideation. Specifically, higher levels of daily life

TABLE 2. Multiple regression analysis: effects of smartphone addiction sub-factors on suicidal ideation and the moderating role of gender.

Category	B	S.E.
Control variable School grade	0.028	0.019
Independent variables		
Daily life disturbance (A)	0.110**	0.035
Virtual world orientation (B)	0.214***	0.030
Withdrawal (C)	0.106**	0.035
Tolerance (D)	-0.085**	0.031
Moderator Gender (ref. = Male) (E)	0.103	0.100
Interaction Terms		
A × E	-0.027	0.050
B × E	-0.045	0.042
C × E	-0.086	0.049
D × E	0.103*	0.044
(Constant)	0.878***	0.072
R^2	0.129	
F	27.690***	

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; The regression model presented is a single multiple regression model in which all four sub-factors of the SAPS were entered simultaneously as independent variables. B: Unstandardized regression coefficient; S.E.: Standard Error.

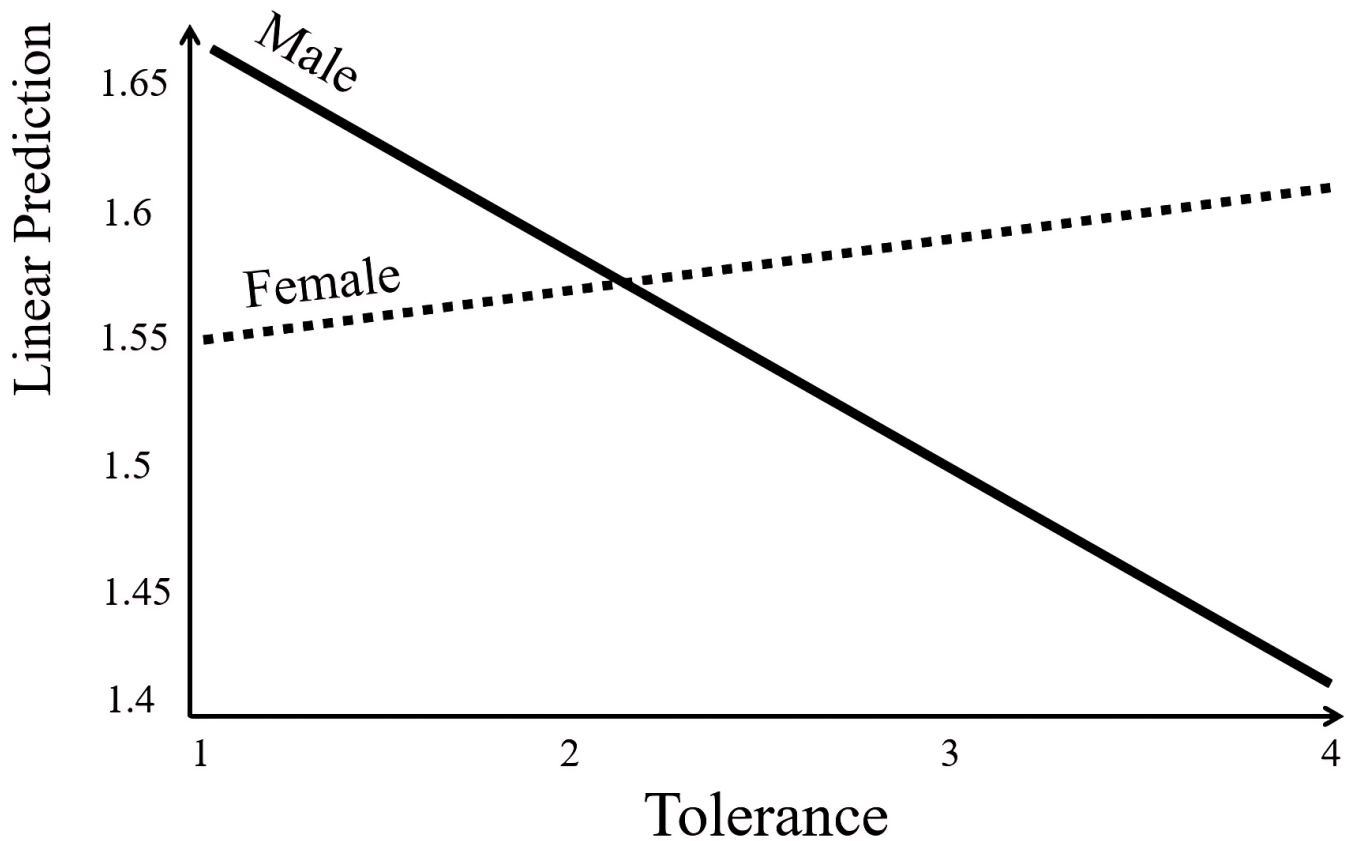


FIGURE 1. Moderating effect of gender on the relationship between tolerance and suicidal ideation.

disturbance, virtual world orientation, and withdrawal were significantly associated with higher levels of suicidal ideation, whereas higher tolerance was associated with lower levels of suicidal ideation. These results are consistent with previous studies using multiple regression that demonstrated a direct association between the level of smartphone addiction and suicidal ideation [17]. They also highlight that smartphone addiction is not merely a matter of usage frequency, but rather a significant psychological and behavioral factor that may negatively affect adolescents' quality of life [35].

Third, although gender, as a moderating variable, did not have a direct effect on suicidal ideation, the interaction between gender and tolerance was statistically significant. Specifically, among females, higher tolerance was associated with increased suicidal ideation, whereas among males, higher tolerance was associated with decreased suicidal ideation. This finding is noteworthy in that the relationship between tolerance and suicidal ideation was more pronounced among female adolescents, suggesting that the meaning and experience of tolerance may differ by gender. More specifically, for males, habitual smartphone use may serve as a coping mechanism for emotional avoidance or stress relief, which could in turn reduce suicidal ideation. On the other hand, for females, higher levels of tolerance may intensify their awareness of addiction and feelings of loss of control, leading to the accumulation of negative emotions and an increased risk of suicidal ideation. The result that tolerance appears to act as a protective factor for males but a risk factor for females may be explained by gender differences in emotional coping strategies. Previous studies

have shown that males are more likely to use smartphones as tools for emotional avoidance or regulation, while females tend to internalize psychological stress and experience stronger feelings of helplessness related to loss of control [36]. Furthermore, research suggests that males are more inclined to adopt problem-focused or externalizing coping strategies, whereas females typically employ emotion-focused and internalizing strategies [37, 38], which further supports this interpretation.

Based on these findings, this study offers several practical implications. First and foremost, timely intervention is needed to address suicidal ideation among adolescents. This study empirically confirmed that sub-factors of smartphone addiction are significantly related to suicidal ideation, and that the impact of tolerance on suicidal ideation differs by gender. These results suggest that adolescent mental health should not be regarded merely as an individual or psychological issue, but rather as a complex social phenomenon influenced by the digital environment [39].

First, simply focusing on reducing smartphone usage time may be insufficient to effectively mitigate the sub-factors of smartphone addiction—such as daily life disturbance, virtual world orientation, and withdrawal—that are associated with increased suicidal ideation. In fact, adolescents with smartphone overdependence have been found to be at significantly greater risk for suicidal thoughts and attempts than their peers [17]. Therefore, interventions targeting smartphone addiction must go beyond mere time control to adopt an integrated approach that addresses both psychological and behavioral aspects of addiction [40]. In Korea, the Ministry of Educa-

tion and the Ministry of Health and Welfare jointly operate smartphone addiction prevention programs based on cognitive behavioral therapy (CBT) and provide professional counseling and treatment services to high-risk adolescents through the “Smart Shelter Center”. An international example is Canada’s “24-Hour Movement Guidelines”, which recommend limiting screen time to under two hours while simultaneously promoting physical activity, sleep hygiene, and mental health support [41]. Such multi-dimensional interventions—featuring collaboration among schools, local communities, and health institutions, and combining CBT-based education and counseling with emotional support systems and professional mental health services—are likely to reduce smartphone addiction and help prevent suicidal ideation among adolescents.

Second, since the sub-factor of smartphone addiction known as “tolerance” may differ by gender, interventions targeting this factor must also adopt gender-sensitive approaches. Tolerance refers not just to increased usage time but to a psychological and behavioral condition in which individuals fail to achieve satisfaction without stronger stimuli or prolonged use [23]. Currently, most intervention programs targeting smartphone addiction focus on the overall level of addiction and do not adequately account for sub-factors such as tolerance or gender differences. For example, Korea’s Smart Shelter Center identifies adolescents at risk of overdependence and provides counseling and education, but lacks differentiated interventions based on tolerance levels or gender-specific needs. Therefore, more sophisticated intervention strategies that consider the mechanisms of tolerance and gender-related differences are necessary. Such targeted approaches are likely to contribute more effectively to the prevention of smartphone addiction and the promotion of adolescent mental health.

This study, however, has several limitations. First, suicidal ideation was assessed using a single item, which may raise concerns regarding the reliability and validity of responses. Second, due to the use of secondary data, the sample was limited to third-year middle and high school students, and the range of available control variables was restricted. As a result, important confounding factors such as socioeconomic status, depressive symptoms, academic stress, and parenting style could not be fully accounted for. Moreover, the single-item measure of suicidal ideation—“Have you ever felt that you wanted to die?”—may not have adequately captured the conceptual complexity of suicidal thoughts. Future research should incorporate multi-item scales and a broader set of control variables to enhance the precision and explanatory power of analyses, thereby contributing to the development of more effective suicide prevention strategies for adolescents. Third, although the regression models yielded statistically significant results, the overall explanatory power for suicidal ideation was relatively limited. This reflects the multifaceted nature of suicidal ideation, which is influenced by a wide range of psychosocial factors beyond smartphone addiction. It also highlights the inherent limitations of addressing such a complex phenomenon within the scope of a single study.

Nevertheless, this study provides empirical evidence regarding the impact of sub-factors of smartphone addiction on suicidal ideation and confirms the moderating role of gender. These findings offer a more refined understanding of how

smartphone addiction manifests differently by gender. In particular, the significant gender difference observed in the relationship between tolerance and suicidal ideation underscores the importance of gender-specific intervention strategies. By using large-scale secondary data, this study ensures both empirical reliability and population-level representativeness. The results can serve as a foundational resource for the development of practical interventions and policy initiatives aimed at preventing smartphone addiction and suicide among adolescents. Furthermore, considering that male adolescents exhibited higher levels of virtual world orientation and withdrawal behaviors, the findings underscore the need to address such addiction patterns as part of broader efforts to promote mental health among boys. Early intervention targeting smartphone addiction during adolescence may not only help reduce suicidal ideation but also contribute to long-term psychological well-being and the prevention of mental health problems in adulthood.

5. Conclusions

This study empirically examined how sub-factors of smartphone addiction influence suicidal ideation among adolescents and demonstrated the moderating role of gender in this relationship. All four sub-factors—daily life disturbance, virtual world orientation, withdrawal, and tolerance—were significantly associated with suicidal ideation. Notably, the effect of tolerance varied by gender: it acted as a protective factor for male adolescents while posing a risk factor for females. These gender differences may reflect variations in sociocultural expectations and coping strategies related to smartphone use. The findings suggest that smartphone addiction during adolescence can have profound implications not only for emotional and behavioral outcomes but also for developmental trajectories. Adolescence is a critical period for the formation of identity, emotional regulation, and peer relationships. Excessive dependence on smartphones during this stage may hinder healthy psychological development and negatively impact mental health. Furthermore, this study is among the first to identify gender-specific effects of tolerance in the relationship between smartphone addiction and suicidal ideation, thereby offering important academic contributions. By shedding light on a previously underexplored gender difference, the findings can inform more nuanced and targeted mental health interventions. Future research should consider using validated multi-item scales to more precisely measure suicidal ideation and incorporate unmeasured variables such as family environment, mental health history, and peer relationships to enhance explanatory power and generalizability. In particular, multidimensional intervention strategies that account for gender-specific characteristics may be effective in reducing smartphone overdependence and preventing suicidal ideation among adolescents.

AVAILABILITY OF DATA AND MATERIALS

The data presented in this study are available on reasonable request from the corresponding author.

AUTHOR CONTRIBUTIONS

KHJ and DS—conceived and designed the study. JK—performed the statistical analysis and data interpretation. GJ—drafted the manuscript. HJC—contributed to manuscript writing and critical revision. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Institutional Review Board of Jeonbuk National University (JBNU IRB 2025-04-028). Since this study used publicly available, de-identified secondary data, the requirement for informed consent was waived by the National Youth Policy Institute.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Beak YE, Chung HW. Classifying latent classes in adolescent's social emotional development and exploring influencing variables. *Studies on Korean Youth*. 2024; 35: 29–58. (In Korean)
- [2] Steinberg L, Morris AS. Adolescent development. *Annual Review of Psychology*. 2001; 52: 83–110.
- [3] Lee ES, Park SW, Kim EH. Predictors of suicidal ideation in adolescents. *The Korean Journal of School Psychology*. 2024; 21: 1–26. (In Korean)
- [4] Sun RC, Hui EK. Psychosocial factors contributing to adolescent suicidal ideation. *Journal of Youth and Adolescence*. 2007; 36: 775–786.
- [5] Choi JW, Hong SO. Effectiveness analysis of the Life-Respect Program for youth suicide prevention. *Industry Promotion Research*. 2022; 7: 43–51. (In Korean)
- [6] Gould M, Jamieson P, Romer D. Media contagion and suicide among the young. *American Behavioral Scientist*. 2003; 46: 1269–1284.
- [7] Ministry of Health and Welfare, Korea Foundation for Suicide Prevention. *Suicide statistics yearbook*. 2025. Available at: <https://kfsp-datazoom.or.kr/noticeview.do> (Accessed: 05 April 2025).
- [8] Lee TH, Kim KH. Predictors of suicidal ideation trajectory among adolescence. *Korean Journal of Youth Studies*. 2023; 30: 31–59. (In Korean)
- [9] Bridge JA, Goldstein TR, Brent DA. Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry*. 2006; 47: 372–394.
- [10] Klonsky ED, May AM, Saffer BY. Suicide, suicide attempts, and suicidal ideation. *Annual Review of Clinical Psychology*. 2016; 12: 307–330.
- [11] Im Y, Oh WO, Suk M. Risk factors for suicide ideation among adolescents: five-year national data analysis. *Archives of Psychiatric Nursing*. 2017; 31: 282–286.
- [12] Rueter MA, Kwon HK. Developmental trends in adolescent suicidal ideation. *Journal of Research on Adolescence*. 2005; 15: 205–222.
- [13] Brodersen K, Hammami N, Katapally TR. Smartphone use and mental health among youth: it is time to develop smartphone-specific screen time guidelines. *Youth*. 2022; 2: 23–38.
- [14] Huang Q, Lin S, Li Y, Huang S, Liao Z, Chen X, *et al.* Suicidal ideation is associated with excessive smartphone use among Chinese college students. *Frontiers in Public Health*. 2022; 9: 809463.
- [15] Lee MS, Lee H. Problematic smartphone use and its relationship with anxiety and suicidal ideation. *Psychiatry Investigation*. 2023; 20: 843.
- [16] Li G, Conti AA, Qiu C, Tang W. Adolescent mobile phone addiction during the COVID-19 pandemic predicts subsequent suicide risk: a two-wave longitudinal study. *BMC Public Health*. 2022; 22: 1537.
- [17] Shinetsetseg O, Park J, Kim SY, Lee K. Association between smartphone addiction and suicide. *International Journal of Environmental Research and Public Health*. 2022; 19: 11600.
- [18] Bargh JA, McKenna KY. The Internet and social life. *Annual Review of Psychology*. 2004; 55: 573–590.
- [19] Kwon M, Kim DJ, Cho H, Yang S. Development and validation of a smartphone addiction scale (SAS). *PLOS ONE*. 2013; 8: e56936.
- [20] Cheng J, Peng C, Rong F, Wang Y, Tan Y, Yu Y. Mobile phone addiction and suicide behaviors among Chinese adolescents: the mediation of poor sleep quality. *Journal of Behavioral Addictions*. 2024; 13: 88–101.
- [21] Kim MH, Min S, Ahn JS, An C, Lee J. Association between high adolescent smartphone use and academic impairment, conflicts with family members or friends, and suicide attempts. *PLOS ONE*. 2019; 14: e0219831.
- [22] Ministry of Science and ICT, NIA. The survey on smartphone overdependence. 2024. Available at: https://www.nia.or.kr/site/nia_kor/ex/bbs/View.do?cbIdx=65914&bcIdx=27831&parentSeq=27831 (Accessed: 05 April 2025).
- [23] Kim DI, Lee Y, Lee J, Nam JK, Chung Y. Development of smartphone addiction proneness scale for adults. *Korea Journal of Counseling*. 2012; 13: 629–644. (In Korean)
- [24] Ahn SK, Chung JJ, Kang JA, Kim SY. The latent transition analysis of smartphone dependency from parents to children. *Health and Social Welfare Review*. 2024; 44: 311–335. (In Korean)
- [25] Hong CY, Oh KS, Kim JM. Effects of parents' negative parenting attitudes on adolescents' smartphone overdependence. *Korean Association of Human Ecology*. 2025; 34: 45–57. (In Korean)
- [26] Kim BN. Effect of smartphone addiction on youth's sociality development. *Journal of the Korea Contents Association*. 2013; 13: 208–217. (In Korean)
- [27] Kim SH, Jeong KH, Ryu JH. Parental smartphone addiction sub-factors on children's smartphone addiction. *Journal of Humanities & Social Sciences*. 2022; 30: 31–49. (In Korean)
- [28] Ko EJ, Choi H, Han S, Kim H. The effect of smartphone addiction on insomnia. *Journal of the Korea Academia-Industrial Cooperation Society*. 2023; 24: 49–59. (In Korean)
- [29] Park HS, Schepp KG, Jang EH, Koo HY. Predictors of suicidal ideation among high school students by gender. *Journal of School Health*. 2006; 76: 181–188.
- [30] Kwon MJ, Kim HJ, Lee SY, Park JH. Factors related to suicidal ideation by gender in adolescents with depression. *Journal of the Korea Academia-Industrial Cooperation Society*. 2024; 25: 543–552. (In Korean)
- [31] National Youth Policy Institute. A study on the implementation of the UN convention on the rights of the child: 2024 review of Korean children's and youth rights. 2024. Available at: https://www.nypi.re.kr/brdr/boardrrView.do?brd_id=BDIDX_PJk7xvf7L096mig7Phd3YC&cont_idx=851&edomweivgp=R&menu_nix=4o9771b7&seltab_idx=0 (Accessed: 05 April 2025).
- [32] Lee JY, Kim JS. Factors affecting the over-dependence of adolescents' smartphone. *Journal of Humanities & Social Sciences*. 2020; 11: 1171–1184.
- [33] Kang J, Jang S, Kim H, Kim M, Kim H, Joo J, *et al.* Same but different youth: a study exploring gender differences in factors influencing suicidal ideation and suicide attempts. *Health and Social Welfare Review*. 2023; 43: 69–84. (In Korean)
- [34] Lee J. Gender differences in suicide ideation. *Journal of Health Informatics and Statistics*. 2022; 47: 250–257. (In Korean)
- [35] Matar Boumosleh J, Jaalouk D. Depression, anxiety, and smartphone addiction. *PLOS ONE*. 2017; 12: e0182239.
- [36] Domoff SE, Radesky JS, Lumeng JC, Miller AL, Gearhardt AN. Associations between mobile device use for calming and emotion regulation in early childhood. *JAMA Pediatrics*. 2022; 176: 28–35.

- [37] Tamres LK, Janicki D, Helgeson VS. Sex differences in coping behavior: a meta-analytic review and an examination of relative coping. *Personality and Social Psychology Review*. 2002; 6: 2–30.
- [38] Matud MP, García MC, Fortes D. The impact of coping styles and gender on situational coping. *Frontiers in Psychology*. 2022; 13: 807626.
- [39] Kim J. Suicidal ideation and associated factors by sex in adolescents. *Journal of the Korea Contents Association*. 2012; 12: 261–268. (In Korean)
- [40] Lee J, Yoo J, Heo G. Gender, self-esteem, and self-control on the smartphone addiction in university students. *Journal of The Korean Data Analysis Society*. 2014; 16: 1557–1566. (In Korean)
- [41] Sampasa-Kanyinga H, Chaput JP, Hamilton HA, Tremblay MS. The

Canadian 24-hour movement guidelines. *Canadian Journal of Public Health*. 2022; 113: 312–321.

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