Research Article

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Predictors of Mental Health among Secondary School Students in Thailand: The Roles of Grit, Self-Esteem, and Smartphone Addiction

Paul Ratanasiripong[1], Suda Hanklang[2], Worawon Nungdanjark[3], Yada Thongthammarat[4], Emily Ramon[1]

[1]California State University, Long Beach, USA

[2]Vongchavalitkul University,Thailand

[3]Mental Health Center 9, Nakhornratchasima,Thailand

[4]Nakhornratchasima Rajanakarindra Psychiatric Hospital,Thailand

Correspondence: Paul Ratanasiripong, Ph.D., California State University, Long Beach, USA. E-mail: Paul.Ratanasiripong@csulb.edu

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Abstract

This study investigated factors that impacted the mental health of secondary school students in Thailand. This cross-sectional study included 1,560 participants from six class levels in six public schools in Thailand. The survey instruments included the Center for Epidemiologic Studies Depression scale, Perceived Stress Scale, Short Grit Scale, Smartphone Addiction Scale-Short Version, and the Rosenberg's Self-Esteem Scale. For secondary school adolescents, results indicated that Grit, Self-esteem, and smartphone addiction were significant predictors of stress (R^2 =.46); self-esteem and smartphone addiction significantly predicted depression (R^2 = .39); girls have significantly higher levels of depression, stress, smartphone addiction, and higher GPA than boys; and girls have significantly lower levels of self-esteem and grit than boys. Recommendations include strengthening parental involvement and supportive relationships among secondary school adolescents, which could help to reduce smartphone addiction and mental health problems. Additionally, implementing mental health literacy and intervention programs at schools could help to spread awareness, reduce stigma, improve resiliency, and boost self-esteem.

Keywords: Depression, Stress, Grit, Self-Esteem, Smartphone addiction

What was Known

- Depression and stress levels have been increasing among secondary students.
- Social media algorithms are designed to maximize engagement, resulting in students becoming more addicted to their smartphones.

What's New and Next

- Smartphone addiction have significant negative impact on students' stress and depression.
- Cultivating supportive relationships and building resiliency among secondary school students can help reduce their mental health issues.

Introduction

The prevalence of mental health issues is climbing among secondary school students across the world[1]. Secondary school education typically encompasses adolescents ages 12 through 18. Adolescence is a critical developmental stage; this group is prone to mental health issues such as depression, stress, and anxiety. As smartphones become increasingly common among adolescents and social media algorithms growing more addictive, the potential danger of smartphone addiction for students must be examined. Additionally, healthy coping mechanisms such as instilling grit and improving self-esteem to help improve mental health and well-being must also be considered.

According to the World Health Organization, depression is one of the leading causes of illness and disability among adolescents around the world, while suicide is among their leading causes of death[1]. Depressive symptoms among adolescents include feelings of sadness or hopelessness, loss of interests, irritability, changes in appetite or weight, difficulty concentrating, and low self-esteem. Secondary school students have limited knowledge about mental health problems and often do not seek help for their depression[2]. Stigma is a critical barrier for adolescents that can impede them from seeking support for mental health. Among secondary school students in the United States, nearly 50% report that they find it challenging to seek help due to embarrassment or stigma[3, 5]. Secondary school students also feel skeptical about help-seeking due to the confusion on confidentiality and fear that their parents will discover what they share with mental health professionals[5]. Among South Korean adolescents, feelings of depression are the most vital factor that predicts an increased risk for suicidal ideation and suicide attempts[6]. Other factors that may elevate risks for depression and suicide among

adolescents in Asia include inadequate sleep, low socioeconomic status, poor academic performance, academic stress, lack of physical activity, alcohol and substance use, and physical health issues[6-11]. In Thailand, adolescents who experience adverse childhood experiences are prone to detrimental mental health outcomes, such as depression and anxiety that may persist into adulthood[12, 13]. High parental involvement was found to lowers depressive symptoms among secondary school students in Thailand[14].

The World Health Organization indicated three factors that contribute to the stress level among adolescents: peer pressure to conform, identity exploration, and exposure to adversity[15]. Cyber bullying, social media portrayal of idealized body image, economic hardship, family conflict, abuse, standardized testing, and academic difficulties are some of the specific challenges that increase stress among secondary school students. High levels of stress could lead to sleep difficulties and other mental disorders for this age group[16, 17]. The main stressors among secondary school students from United Arab Emirates, India, and China are reported to be academic matters along with teacher and family expectations[18-20]. Among Thai upper secondary school students, 26% were found to have high level of educational stress[21].

Grit is the desire to sustain interest in and effort toward personally meaningful and challenging goals[22]. Often, grit can predict academic outcomes, including retention and graduation[22, 23]. Developing grit requires a positive environment. For instance, having a positive school culture perceived as goal-oriented leads to personal growth and effort among secondary school students[24]. Perceptions of teacher social support are also strongly linked to grit and achievement[25]. Additionally, grit has been found to be a protective factor against mental health issues. A high level of grit among upper secondary school students in Finland was found to reduce depressive symptoms, loneliness, and school burnout[26]. Upper secondary school students in China also found grit to be a protective factor against burnout[27]. Among secondary school students in Thailand, grit was found to be associated with interest in school, satisfactory relationships with teachers, and parental support[28].

Self-esteem is a person's sense of self-worth related to well-being. The transition to secondary school during early adolescents plays a pivotal role in development[29]. Self-esteem is linked to life satisfaction, academic achievement, well-being, and mental health[30, 33]. Studies found that parental involvement, quality relationships, and respectful teachers improve academic, social, and emotional functioning, creating healthy self-esteem development among adolescents[29, 34]. In addition, support from family and close friends increased self-esteem among

Chinese children and adolescents[35], while social exclusion resulted in low self-esteem among Turkish upper secondary school students[36]. In Thailand, self-esteem was found to contribute to the happiness level among upper secondary students[37].

Smartphone addiction is excessive use of smartphones, with factors such as uncontrolled usage and neglect of daily activities, and often comes with negative consequences to one's life[38]. When examining smartphone addiction among adolescents, it is crucial to consider the unique factors that affect this population. Researchers have found that adolescents are highly prone to smartphone addiction[39, 40]. The pandemic dramatically increased the time spent on smartphones, and a significant increase in overuse and addiction was observed[41, 42]. This increase in smartphone addiction led to negative social, clinical, and psychological outcomes. One major trend surrounding smartphone addiction is poor mental health. Among adolescents in Switzerland, increased smartphone use is linked to sleep difficulties and depression and those with lower physical activity are more prone to smartphone addiction[39, 40]. Among secondary school students in South Korea and China, those with high risk of smartphone addiction are more susceptible to symptoms of depression and anxiety[43, 44]. At the upper secondary level, Thai student had higher prevalence of smartphone addiction (36%) than Japanese students (12%); female students in both countries are also more susceptible to smartphone addiction than their male counterparts[45]. Among secondary school students in the United States, male students (23%) have higher smartphone addiction than female students (21%)[46].

With the growing mental health challenges faced by teenagers worldwide, examining the factors that influence their mental health is essential. Currently, there are limited studies on this topic in Thailand. This study aims to investigate how self-esteem, smartphone addiction, and grit impact depression and stress among Thai secondary school students.

Materials and Methods

Participants and Procedures

There were 1,560 secondary school students who participated in this study. In Thailand, secondary school is separated into lower and upper secondary levels. Lower secondary education includes Mathayom 1 through 3 (equivalent to grades 7 thru 9), while upper secondary education includes Mathayom 4 through 6 (equivalent to grades 10 thru 12). After receiving Institutional Review Board Approval (Ref# 6/2563.17.04.2563), participants were

recruited from Mathayom 1 through 6 from six schools in the same district. Those who received parental or guardian consent to participate in this research study completed the paper-based questionnaires. See Table 1 for demographic characteristics.

Table 1 Participant demographic (n = 1,560)

Variables	Frequency	%
Class Level (M = Mathayom)		
M 1	370	23.7
M 2	403	25.3
M 3	362	23.2
M 4	163	10.4
M 5	127	8.1
M 6	135	8.7
Gender		
Female	832	53.3
Male	728	46.7
	Mean (SD)	*Range*
Age	14.48 (1.64)	11-20
GPA	2.96 (0.65)	1.00-4.00
Homework hours per week	4.34 (5.65)	1-48
Exercise hours per week	5.42 (8.49)	0-48
Sleep hours per night	7.62 (1.51)	4-12
Smartphone usage per day	7.82 (4.63)	0-20

Measures

Two instruments were used in this study to assess the students' mental health conditions. The Center for Epidemiological Studies Depression (CES-D) Scale was used to measure depression among participants[47]. The CES-D scale consists of 20 items that ask about various symptoms of depression in the past week. Higher score on the CES-D indicates higher level of depression. The Cronbach's alpha for CES-D for this study was .89. The Perceived

Stress Scale (PSS) was used to measure the perception of stress among participants[48]. The PSS consists of 10 items that ask about stress symptoms over the past month. Higher score on the PSS indicates higher level of stress. The Cronbach's alpha for PSS for this study was .69.

Three instruments were used in this study as predictor variables. The GRIT Scale-Short Form (GRIT-S) was used to measure the level of grit among participants[49]. The GRIT-S consists of 8 items that assess the student's perseverance and passion. Higher score on the GRIT-S indicates higher level of grit. The Cronbach's alpha for GRIT-S for this study was .59. The Rosenberg Self-Esteem (RSE) scale was used to measure the level of self-esteem among participants[50]. The RSE scale consists of 10 items that ask about self-acceptance and self-worth. Higher score on the RSE indicates higher level of self-esteem. The Cronbach's alpha for RSE for this study was .78. The Smartphone Addiction Scale-Short Version (SAS-SV) was used to measure the level of smartphone addiction among participants[51, 52]. The SAS-SV consists of 10 items that assess the behaviors related to smartphone. Higher score on the SAS-SV indicates higher level of smartphone addiction. The Cronbach's alpha for SAS-SV for this study was .83.

Results

The results indicate significant gender differences among secondary school students in this study. Girls have significantly higher level of smartphone addiction, depression, stress and GPA than boys. Additionally, girls have significantly lower level of self-esteem and grit than boys. See Table 2.

Table 2 Gender differences (n = 1,560)

	Boys	Girls		
Variables	*M* (SD)	M (*SD*)	*p*	*d*
SAS-SV (smartphone addiction)	30.19 (8.44)	32.48 (9.29)	<.001	0.26
CES-D (depression)	22.12 (9.95)	28.08 (10.27)	<.001	0.59
PSS (stress)	18.71 (4.78)	21.84 (5.52)	<.001	0.60
GPA	2.84 (0.63)	3.06 (0.65)	<.001	0.35
RSE (self-esteem)	27.22 (4.49)	25.09 (4.84)	<.001	0.46
GRIT-S (average)	3.17 (0.51)	2.97 (0.53)	<.001	0.38

*$p < .05$ **$p < .01$ ***$p < .001$

The result of a multiple regression model indicated that self-esteem and smartphone addiction are significant predictors of depression among secondary school students (R^2 = .39). The higher the level of smartphone addiction and lower the level of self-esteem, the higher the level of depression. Another multiple regression model indicated that grit, self-esteem, and smartphone addiction are significant predictors of stress among secondary school students (R^2 = .46,). The higher the level of smartphone addiction, the lower the level of self-esteem, and the lower the level of grit, the higher the stress. See Table 3.

Table 3 Multiple regression analyses of variables predicting mental health

Variables	R^2	Adjusted R^2	F	df	B	SE	$Beta$	t
Depression	.39	.39	323.12***	(3, 1499)				
Smartphone Addiction					.17	.025	.14	6.56***
Self-Esteem					-1.21	.055	-.55	-24.13***
Grit					-.09	.058	-.04	-1.50
Stress	.46	.46	432.21***	(3, 1523)				
Smartphone Addiction					.11	.012	.18	8.98***
Self-Esteem					-.58	.024	-.51	-23.96***
Grit					-.19	.028	-.15	-6.85***

*p < .05 **p <.01 ***p <.001

Discussion

The results from this study indicated that smartphone addiction and self-esteem account for 39% of depression among secondary school students while smartphone addiction, self-esteem, and stress account for 40% of their stress. Additionally, girls have significantly higher level of smartphone addiction, depression, and stress as well as with significantly lower level of self-esteem and grit than boys. Two of these results are similar to previous studies where excessive smartphone use was more prevalent among girls[53]; also, girls have been found to have lower self-esteem than boys[54].

To enhance the well-being of secondary school students, efforts are needed to promote their resilience and self-worth while minimizing their smartphone usage. Nearly half of mental health disorders in adulthood begin as early as 14 years old[55]. With the rapid increase of

technology, smartphone addiction has become more prevalent, particularly among adolescents. A comparison study between adolescents and adults found that smartphone addiction is most prevalent in adolescents compared to young adults[39].

Strengthening parental involvement and social connectedness with peers and school personnel could decrease mental health problems. Healthy relationships create a greater sense of belonging and support, which may act as a mediator against mental health problems and help instill self-esteem[56]. A robust social support system and a positive school culture help instill self-esteem and grit among adolescents[24, 32]. Thus, implementing this supportive environment in school and at home could further decreases mental health problems and instills self-esteem and grit. Promoting healthy parent-child relationships also decreases smartphone addiction and increases the quality of life in adolescents[57]. Additionally, experts suggest increasing physical activity among individuals with potential smartphone addiction may help reduce stress levels and screen time[58].

Additionally, implementing mental health literacy programs may help promote mental health awareness and reduce stigma. There have been efforts toward implementing educational programs to reduce mental health stigma and increase mental health knowledge in many countries[59, 61]. In South Korea, the School Mental Health Resources and Research Center of the Ministry of Education created a mental health literacy program for secondary school students to help with mental health awareness[61]. The program consists of 4 one-hour sessions educators present during school. Learning goals include how to obtain and maintain positive mental health; how to decrease stigma against mental health illnesses; accurate knowledge of common mental disorders in adolescents; how to recognize signs and symptoms of mental health problems in oneself and others; how to ask for help; and how to help others. The curriculum includes news clips, videos, simple expressions, and quizzes to help create understanding and engagement among students. Thailand's education system should consider implementing a similar mental health literacy program to help cultivate student's ability to ask for help when necessary, raise awareness of mental health, and reduce stigma surrounding mental health issues.

Limitation of this study included having only one school district in this study. Future studies should include several school districts from various regions of Thailand as well as other countries. Additionally, information on the specific smartphone app usage was not collected; obtaining this additional data in the future could further help understand the smartphone usage behavior of adolescents.

Conclusion

Secondary school students in Thailand experience high-stress levels, depression, and smartphone addiction. A few key factors to help improve mental health include instilling grit and promoting self-esteem to minimize stress and depression. Reducing smartphone use also helps to decrease depression and stress, especially among girls. Additionally, healthy relationships between students and their parents, peers, and school personnel could help to mediate mental health problems and smartphone addiction along with the mental health literacy program. It is important for schools to do more for the mental health of students and the time to act is now.

Ethical Approval Statement

This study was reviewed and approved by the Institutional Review Board at Vongchavalitkul University (Ref# 6/2563.17.04.2563).

Author Contributions

PR designed the study, analyzed and interpreted the data, and contributed to the drafting and revising of the manuscript. SH, WN, YT conducted the study, including data collection. ER contributed to the drafting of the manuscript. All authors read and approved the manuscript prior to submission for publication.

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Conflicts of Interest

None.

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