

**Research Article**

# **THE ROLE OF LONELINESS AND SELF-CONTROL TO THE ASSOCIATION BETWEEN NOMOPHOBIA AND DEPRESSION SYMPTOMS AMONG VIETNAMESE HIGH SCHOOL STUDENTS**

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## **Abstract**

Numerous studies have also revealed that students with a high level of nomophobia have an increased risk of depression. However, few researchers are interested in examining how the association between nomophobia and depressive symptoms mediates loneliness and self-control. This study aimed to investigate, among Vietnamese high school students, the association between nomophobia and depressive symptoms, specifically focusing on the role that loneliness and self-control play as potential mediators of that relationship. The Nomophobia Scale (NMP-Q), Depression Anxiety Stress Scale 21 (DASS-21), The UCLA loneliness scale version 3 (UCLA III), and The Brief Self-Control Scale (BSCS) were completed by 556 Vietnamese high school students. Using the PROCESS macro, mediation analyses were conducted to investigate the relationship between variables. According to our findings, nomophobia was positively associated with symptoms of depression, and loneliness and self-control partially mediated this relationship. It is suggested that methods for preventing claustrophobia and depressive symptoms be taken seriously in order to increase self-control and decrease loneliness. *ASEAN Journal of Psychiatry, Vol. 24 (5) May, 2023; 1-11.*

**Keywords:** Depression Symptoms; High School Students; Loneliness; Nomophobia; Self-Control

## **Introduction**

The increasing use of smartphones has led to a new anxiety disorder called nomophobia or no mobile phone phobia. It is described as anxiety or discomfort rising due to the inability to access the phone, including receiving or making phone calls, text messages, accessing the social network, the online world, or losing an internet connection [1,2]. Nomophobia is strongly linked to depression, anxiety, and low quality of life [3]. According to Bianchi and Phillips, 77% of teenagers

are concerned when their phones are not nearby [4]. The feeling of being disconnected with their smartphones and internet devices excessively causes mental disorders, impair concentration, sleep disorders, and reduced social interactions [5-7]. Duan, et al., discovered that smartphone and internet addiction was associated with anxiety and depressive symptoms [8]. According to a 2016 study, increasing time spent on electronic devices was also significantly correlated with lower psychological well-being [9]. The pandemic has contributed to the confirmation of this ad-

verse correlation. According to Gao, et al., there is a positive relationship between frequent social media use and anxiety and depression in the Chinese population due to the need to access social media during the quarantine that causes anxiety and depression [10]. In turn, anxiety and depression continued to lead to the increased use of social media *via* smartphones. Besides that, excessive using smartphones during the pandemic has raised the frequency of gaming, internet use disorder, and insomnia [11].

Twenty percent of Vietnam's high school-aged population uses a phone, and Internet connectivity has become widespread in this country. Nomophobia has appeared in Vietnam with the evidence from a study by Nguyen and Tran, in which 90.6% of students in Hanoi city have symptoms of nomophobia [12]. After the appearance of COVID-19, using smartphones and having Internet connection has become normal due to the compulsory transfer of transferring learning and teaching to online mode across the country.

In Vietnam, however, there is a shortage of evidence about nomophobia, its association with mental disease, and its causes. Therefore, a more thorough investigation of nomophobia and mental health is essential. This research aims to contribute to the expanding body of knowledge concerning the association between nomophobia and depression by investigating and evaluating a theoretical model in which loneliness and self-control are considered mediating factors.

#### *The mediating effect of loneliness and self-control on nomophobia and depressive*

**Nomophobia and loneliness:** Loneliness is a negative emotional state that occurs when there is a perceived gap between desired and actual social relationships [13]. It is also understood as a sense of exclusion, disconnection from others, and dissatisfaction with relationships [14]. Recent research indicates a link between nomophobia and loneliness. The nomophobia increases the risk of loneliness [15-20]. On the other hand, adolescents are lonelier and more anxious as they use their smartphones daily. Social media interactions help lonely adolescents feel more connected and less lonely [21,22]. Depending on their feeling on social media puts them at risk of developing nomophobia. According to some authors, the higher a person's loneliness score, the more likely they are to be addicted to a smartphone. Also another study found that loneliness also mediated between

using smartphones time and nomophobia [23].

**Loneliness and depressive:** Long-term or severe loneliness can be the reason for emotional disturbances and impair mental health [24]. During adolescence, it is easy to experience feelings of loneliness because of changes in health and quality of life [25]. However, if the loneliness feeling exists for a long time that impacts a person's life, it might lead to more severe mental health problems, including depression. A strong correlation between loneliness and depression has been demonstrated through many studies. Cacioppo et al; Demir and Kutlu; Wei et al; Ren; Qualter et al., found a link between loneliness at 5-9 and depression at 13 [26-30]. The explanation might be considered under two perspectives. First, lonely people are more likely to have negative emotions and hostility, which is highly associated with depression [31]. Second, lonely people often find it difficult to socialize with others; therefore, a lack of communication channels leads to a higher risk of experiencing depression [32]. Long-term loneliness can lead to depression which increases the risk of adversely impacting not only that person's life but also their family and the whole of society.

**Nomophobia and self-control:** Self-control can be understood as changing oneself to create a better fit between the individual and the outside world [33]. According to Tangney et al., self-control is controlling, overcoming, or altering one's internal reactions and interrupting undesirable behaviors such as aggression [34]. Mind-behavioral regulation (concentration, changing emotions, moods, suppressing desires, etc.) also breaks habits, resists temptations, keeps discipline, and reflects human control. Research by Yıldız Durak on 786 secondary students showed that self-control negatively correlated with nomophobia [35]. Hidayati et al., showed a significant negative relationship between self-control and nomophobia in university nursing students [36]. Research by Jiang and Zhao, on the correlation of intention to use the phone in the relationship between self-control and problems caused by phone use [37]. This study shows that self-control is negatively correlated with phone use as entertainment or interaction while it is positively correlated with use for information search. Students with good self-control will avoid various negative behaviors, possibly resisting the urge or desire to behave inconsistently with social norms [38,39]. Meanwhile, a lack of self-control makes it difficult to change situations and solve problems, which causes anxiety [40,41].

These concerns cause them to lose focus, lack enthusiasm, and act erratically [42].

**Self-control and depression:** Previous studies have reported that self-control is negatively correlated with depression [43,44]. Good self-control reduces physical and mental health symptoms through an avoidant coping style. People with high self-control seem to be better at inhibiting and initiating, and using more positive coping strategies, being more persistent in essential areas of their lives, having better plans and preparation [45-50]. Good self-control ability is proven to bring many positive results in life because it helps to adjust the associations between risk factors and health outcomes [51].

This study aimed to examine the correlation between nomophobia and depression, in which loneliness and self-control serve as mediating factors, to help students become less dependent on mobile phones and reduce loneliness and depression. The first hypothesis is that there is a positive correlation between nomophobia and depressive symptoms among Vietnamese adolescents. The second hypothesis is that loneliness would mediate the correlations between Nomophobia and depressive symptoms among Vietnamese adolescents. The third hypothesis is that self-control mediates relationships between Nomophobia and depressive symptoms among Vietnamese adolescents.

## **Methodology**

### *Participants*

In April and May of 2021, two high schools in the north-central region of Vietnam participated in a survey *via* convenient sampling. In the sample, the age range is between 16 and 18 ( $M=16.99$ ,  $SD=0.840$ ); there are 224 male students (representing 40.3%) and 332 female students (representing 59.7%); 203 students participating in the study are in the 10th grade, 182 students are in the 11th grade, and 171 students are in the 12th grade. After completing the survey, each student will receive ten pens as a token of appreciation.

### *Materials*

**Nomophobia scale (NMP-Q):** Nomophobia Questionnaire (NMP-Q) developed by Yildirim (2014) includes 20 items, designed in the form of a 7-point Likert scale, from 1="Strongly disagree" to 7="Strongly agree." The total score of NMP-Q

ranges from 20 to 140. The score from the NMP-Q questionnaire is interpreted as follows: NMP-Q score of 20 indicates no nomophobia; NMP-Q scores greater than 20 and less than 60 correspond to mild nomophobia; NMP-Q scores greater than or equal to 60 and less than 100 correspond to moderate nomophobia; and NMP-Q scores greater than or equal to 100 compare to severe nomophobia. The scale demonstrated good reliability [52]. In our study, the reliability of the scale is 0.90.

**Depression Anxiety Stress Scales 21 (DASS 21):** The depression subscale (7-items) of the 21-item Depression, Anxiety, and Stress Scale (DASS-21) was used to evaluate depression [53]. The total score was calculated by summing all items and then duplicating them. Cut-off scores of 0-9 (normal), 10-13 (mild depression), 14-20 (moderate depression), 21-27 (severe depression), and 28-42 (extremely severe depression) are recommended. In this study, the scale achieved good reliability ( $\alpha=0.801$ ).

**The UCLA loneliness scale version 3 (UCLA III):** The UCLA III Scale was used to evaluate the loneliness of high school students. The UCLA III scale includes 20 items, of which 11 items are negative (lonely), and nine are positive (not lonely). Survey participants will rate each item on a scale of 1 (Never) to 4 (Often). The total score for loneliness will be from 20-80, where higher scores mean higher levels of loneliness. In Vietnam, the internal reliability of the scale was reported as 0.850. In this study, the scale showed good reliability with  $\alpha=0.792$

**The Brief Self-Control Scale (BSCS):** The BSCS was used to evaluate the self-control capacity of Vietnamese high school students. The BSCS was created from the original 36-item Self-Control Scale (SCS; Tangney et al., composed of five dimensions: Self-Discipline (11-items), Deliberate/Non-impulsive action (10-items), Healthy Habits (7 items), Work Ethic (5-items), and Reliability (5-items). Tangney et al., subsequently developed the BSCS as a 13-item uni-dimensional measure of self-control, tapping the same range of content as the SCS (it includes items from the five dimensions reported above). The BSCS can be scored, after reverse scores of some items, by adding the items rated on a 5-point scale, anchored from 1=Not at all like me to 5=Very much like me. In our study, this scale has a high level of internal consistency ( $\alpha=0.769$ ).

*Procedure*

Our study had approved by high school principals. All students randomly selected to invite to participate in the study had given consent to enter the survey. Under the guidance and support of administrators and homeroom teachers, the survey was conducted in the classroom. All students who did not consent to do the survey could leave the class and head to the library for personal learning time. Before students answered the questionnaire, we repeated the study’s information, benefits and risks of participating, and commitment to keeping their personal information and answers confidential. After completing the questionnaire, each participant received a gift of 10 pens.

*Analysis*

SPSS version 25.0 was used to conduct statistical analyses. First, we determined the research variables’ percentage, mean, and standard deviation. Second, a 2-sample independent T-test was utilized to examine the mean levels of nomophobia between males and females. Third, a Pearson correlation matrix was constructed, which included nomophobia, depression, loneliness, and self-control. To examine the mediating effects of loneliness and self-control on the connection between nomophobia and depressive symptoms, the macro Hayes’ SPSS PROCESS 3.5 with age and gender as control variables was built.

**Results**

*Prevalence of nomophobia in high school students*

The majority (99.3%) of high school pupils who participated in the poll demonstrate varied degrees of nomophobia. Specifically, 23.6% have severe nomophobia, 63.5% have moderate nomophobia, 12.2% have light nomophobia, and 0.7% have no nomophobia.

*Nomophobia among males and females*

There is a significant difference in nomopho-

bia scores between male and female students ( $p < 0.001$ ), with females ( $M = 85.82$ ) exhibiting a higher level of nomophobia than boys ( $M = 78.07$ ).

*Correlations among study variables*

Positive correlations were found between nomophobia and depression symptoms ( $r = 0.15$ ,  $p < 0.001$ ), loneliness ( $r = 0.10$ ,  $p < 0.05$ ), and negative correlations with self-control ( $r = -0.19$ ,  $p < 0.001$ ). Positively connected with depressive symptoms ( $r = 0.47$ ,  $p < 0.001$ ) and negatively correlated with self-control ( $r = -0.31$ ,  $p < 0.001$ ), respectively, was loneliness. The correlation between self-control and depressive symptoms was negative ( $r = -0.30$ ,  $p < 0.001$ ) (Table 1).

**The role of loneliness and self-control in the relationship between nomophobia and depression symptoms**

In mediation model one nomophobia was a predictor of depression symptoms (a criterion variable) through loneliness (mediators) while controlling for gender (Figure 1 and Table 2).

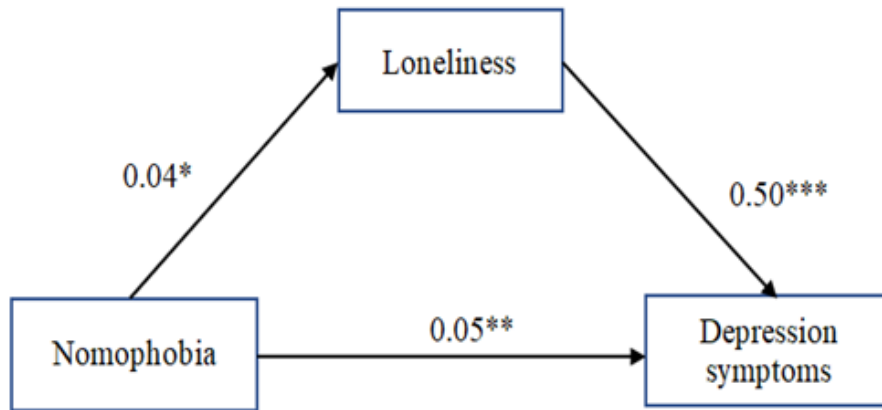
Results showed that nomophobia was a statistically significant predictor of loneliness ( $\beta = 0.04$ ,  $SE = 0.02$ ,  $p < 0.05$ , 95%  $CI = (0.01, 0.07)$ ), and loneliness was a statistically significant predictor of depression symptoms ( $\beta = 0.50$ ,  $SE = 0.04$ ,  $p < 0.001$ , 95%  $CI = (0.42, 0.58)$ ). The direct effect of nomophobia on depression symptoms was significant ( $\beta = 0.05$ ,  $SE = 0.02$ ,  $p < 0.01$ , 95%  $CI = (0.02, 0.08)$ ). The indirect effect of Loneliness on the relationship between nomophobia and depression was statistically significant ( $\beta = 0.02$ ,  $SE = 0.01$ , 95%  $CI = (0.01, 0.04)$ ).

In mediation model two, nomophobia was a predictor of depression symptoms (a criterion variable) through self-control (mediators) while controlling for gender (Figure 2 and Table 3).

**Table 1. Pearson correlations, mean, and standard deviations among study variables.**

	<b>M</b>	<b>SD</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1. Depression	27.24	8.89	-	-	-	-
2. Nomophobia	82.7	21.18	0.15**	-	-	-
3. Loneliness	44.78	8.21	0.47**	0.10*	-	-
4. Self-control	39.44	4.80	-0.30**	-0.19**	-0.31**	-

**Note:** \*Correlation is significant at the 0.05 level (2-tailed); \*\*Correlation is significant at the 0.01 level (2-tailed).

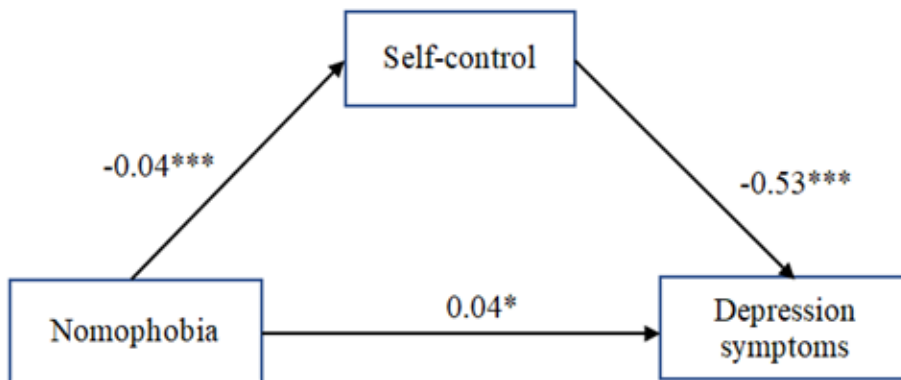


**Figure 1:** The path model of nomophobia, loneliness, and depression symptoms. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**Table 2.** The mediating effect of loneliness on the association between nomophobia and depression symptoms.

Paths	$\beta$	SE	95% CI	
			Low	High
<b>Direct effect</b>				
Nomophobia-Depression symptoms	0.05**	0.02	0.02	0.08
Nomophobia-Loneliness	0.04*	0.02	0.01	0.07
Loneliness-Depression symptoms	0.50***	0.04	0.42	0.58
Gender-Loneliness	0.13	0.72	-1.28	1.54
Gender-Depression symptoms	-1.06	0.68	-2.4	0.29
<b>Indirect effect</b>				
Nomophobia-loneliness-depression symptoms	0.02	0.01	0.01	0.04

**Note:** N=556; CI=Confidence Interval (5000 bootstrap samples); \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .



**Figure 2:** The path model of nomophobia, self-control, and depression symptoms. Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**Table 3.** The mediating effect of self-control on the association between nomophobia and depression symptoms.

Paths	$\beta$	SE	95% CI	
			Low	High
<b>Direct effect</b>				
Nomophobia-Depression symptoms	0.04*	0.02	0.01	0.08
Nomophobia-Self-control	-0.04***	0.01	-0.06	-0.02
Self-control-Depression symptoms	-0.53***	0.08	-0.68	-0.34
Gender-Self-control	-0.01	0.42	-0.82	0.81
Gender-Depression symptoms	-0.99	0.74	-2.45	0.46
<b>Indirect effect</b>				
Nomophobia-self-control-depression symptoms	0.02	0.01	0.01	0.04
<b>Note:</b> N=556; CI=Confidence Interval (5000 bootstrap samples); *p<0.05; **p<0.01; ***p<0.001.				

Results showed that nomophobia was a statistically significant predictor of self-control ( $\beta=-0.04$ ,  $SE=0.01$ ,  $p<0.001$ , 95%  $CI=-0.06$ ,  $-0.02$ ) and self-control was a statistically significant predictor of depression symptoms ( $\beta=-0.53$ ,  $SE=0.08$ ,  $p<0.001$ , 95%  $CI=(-0.68, -0.38)$ ). The direct effect of nomophobia on depression symptoms was significant ( $\beta=0.04$ ,  $SE=0.012$ ,  $p<0.05$ , 95%  $CI=(0.01, 0.08)$ ). The indirect effect of Self-control on the relationship between nomophobia and depression was statistically significant ( $\beta=0.02$ ,  $SE=0.01$ , 95%  $CI=(0.01, 0.04)$ ).

### Discussion

This study examines the effects of loneliness, self-control, and nomophobia on symptoms of depression in Vietnamese high school students. This study specifically examined a mediation model in which loneliness and self-control were considered mediators in the path from nomophobia to depressive symptoms.

First, we have found that nomophobia positively predicted depressive symptoms, supporting hypothesis 1. This finding is in line with previous results. Students usually use their phones on the bed for chatting or screening social media before closing their eyes for sleep. Evidence shows that electronic media use before sleep increases emotional, physiological, and mental arousal and reduces sleep quality. The reasons might be that the fake information they read might lead

to symptoms of anxiety and fear, the amplification of negative emotions through social media, or the electricity impact on the intensity of neurons. However, whatever the reasons are, using a phone before going to bed among adolescents with nomophobia might affect their mental health and lead to long-term physical health problems. According to Király et al., excessive smartphone use can also cause sleep deprivation, leading to gaming disorder, Internet use disorder, and cause the psychosocial crisis. Example the consequence of the COVID-19 period has strengthened these ideas; from which due to the lockdown, the percentage of smartphone use time increased and led to an increase in mental health problems such as anxiety, depression, eye strain, headaches, hearing loss, and bullying after returning schools [54-56].

Second, we have found that loneliness partially mediated the relationship between nomophobia and depressive symptoms, supporting hypothesis 2. This means that nomophobia positively predicts loneliness, and loneliness positively predicts depressive symptoms. As such, nomophobia directly affected depression symptoms and indirectly affected depression symptoms through loneliness. Students remain at home during the pandemic, so they use their phones to pass the time and escape their personal concerns [57,58]. The loneliness and fear of Covid-19 cause the increasing time and frequency of using smartphones. Using more smartphones makes them feel more lonely, anxious, and depression; thus, they have more no-

nomophobia as lonely people often use smartphones to combat loneliness and negative emotions. Also, previous studies have reported the direct relationship between loneliness and depressive symptoms, in which high levels of loneliness can increase depression symptoms. Lonely people often find it difficult to socialize with others, and the situation can be more serious if they don't find channels to communicate.

Finally, we have found that nomophobia also indirectly affects depression symptoms through self-control, supporting hypothesis 3. Self-control plays a part in mediating the relationship between nomophobia and depression symptoms. Previous studies have reported that self-control is negatively correlated with stress, anxiety, and depression. People with better self-control will have better physical and mental health. A cross-sectional survey of 1,538 German speakers online found that those who found their lives meaningful and had self-control reported less emotional distress [59]. The findings of Li et al., have proved that good self-control brings many positive results in life because it helps to adjust the associations between risk factors and health outcomes [60]. Previous research has suggested that people with high self-control are better able to inhibit and initiate, use more positive coping strategies, and be more persistent in essential areas of their lives. Good self-control is strongly associated with a wide range of life outcomes, including better mental health. Individuals with good self-control are more likely to plan (e.g., proactive pandemic preparedness), negative emotions (e.g., anxiety, fear), and conform to strict government guidelines on prevention and protection (e.g., wearing a mask, staying at home as much as possible, and maintaining social distancing). Good observance of the above measures helps to minimize the negative effects of COVID-19 on physical and mental health.

On the other hand, some studies imply that nomophobia and self-control have a negative relationship. For example, Yıldız Durak research has shown that self-control negatively correlates with nomophobia. Hidayati et al., study showed a significant negative relationship between self-control and nomophobia in university nursing students. Research by Jiang and Zhao, shows that self-control is negatively correlated with phone use as entertainment or interaction while it is positively correlated with use for information search. Self-control can predict problematic cell phone use. Student smartphone addiction can be influ-

enced by self-control factors [61]. Students with self-control will avoid various negative behaviors, possibly resisting the urge or desire to behave inconsistently with social norms. Asih and Fauziah also showed that self-control negatively affects students' smartphone addiction [62]. Self-control was a negative correlation with smartphone addiction, which means that when self-control is high, smartphone addiction is lower and vice versa; at the same time, it significantly predicted smartphone addiction with a forecast level of 30.1% [63].

Concerning the limitations, the data is entirely based on direct survey measures, which are prone to bias due to the participants (i.e., high school students). As a result, future research must employ multiple assessment methods to reduce subjectivity's impact [64]. Second, due to the nature of the cross-sectional study, we were unable to establish a causal relationship between the study variables, which encourages longitudinal research on this topic in the future [65,66]. Third, the current study's findings focused solely on the mediating effects of loneliness and self-control on the relationship between nomophobia and depression symptoms. Other influencing factors such as self-esteem, resilience, and subjective well-being on the relationship between nomophobia and depression should be investigated in future studies, particularly in the context of different cultures [67].

## **Conclusion**

This study added to our understanding of the relationship between nomophobia, loneliness, self-control, and depression symptoms in high school students in Vietnam. The internal mechanism underlying nomophobia and depression symptoms has been identified with the partial mediating role of loneliness and self-control. The current study's findings may be useful in implementing psychological interventions to reduce nomophobia in high school students. It is necessary to strengthen self-control and reduce loneliness through various counselling and guidance services such as group instruction, group counselling, and individual counselling and information services to prevent and intervene in nomophobia. This study can be used as a reference to assist counselors in improving the quality and effectiveness of counselling, particularly in developing school-based psychological counselling and guidance programmes. In the context of the COVID-19 pan-

demic, many countries are implementing social distancing. It is difficult to take direct measures to improve the problems of nomophobia and young people's mental health. Therefore, online counselling centres are essential in improving mental health issues and nomophobia in COVID-19. For example, it is possible to consult *via* mobile phone. In the literature, several online measures have been used, such as possible through mobile phones and Internet-based Cognitive Behavioral Therapy. Online counseling centers can effectively reduce nomophobia and mental health problems in adolescents.

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