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Research Article

The Impact of Emotional Intelligence on Internet Addiction: A Case Study of Vietnamese Students

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Internet addiction has attracted significant attention due to its adverse effects on humans, especially young people. This study is aimed at investigating the impact of emotional intelligence on Internet addiction. Data was collected from 744 Vietnamese students in Vietnam. SPSS 20.0 software was used for descriptive statistics, reliability testing, factor analysis, and regression. The empirical results showed that emotional intelligence had a negative influence on Internet addiction. Specifically, the components self-emotion appraisal (SEA), others' emotion appraisal (OEA), and regulation of emotion (ROE) significantly affected Internet addiction. However, the effect of the component use of emotion (UOE) on Internet addiction was not found to be statistically significant. Overall, the results of the study indicate that improving emotional intelligence may reduce the extent of Internet addiction among Vietnamese students.

1. Introduction

In recent years, there has been a rise in the number of studies examining the impact of technology on mental health in humans. In view of the soaring number of Internet users, Shek and Yu [1] warned that Internet addiction is a raising issue over the world, especially in adolescents. Milford et al. [2] observed that students grow accustomed to using various types of social media (e.g., blogs, social networks, and forums) for different purposes, such as entertainment, learning, and communication. However, spending a lot of time on the Internet can be detrimental to education, work, and relationships [3]. Maladaptive use of the Internet can generate psychological distress and mental health disorders [4]. Notable among these is Internet addiction. Internet addiction is understood as a severe mental disorder that endangers young people's physical and mental health [5].

Over the years, scholars have shown increasing interest in researching the antecedents of Internet addiction. According to Trumello et al. [6], adolescence is a key period of transformations in physical and psychological aspects and formation of a personalities. In this process, new technologies play a vital role, which attract young people, as a means to widen social network and to explore a "whole new world" [7]. Young [8] argued that four factors affect students when using social media, namely, applications, emotions, cognition, and life events. Applications have a significant effect on social media users because people who are addicted to the Internet typically become fixated on a particular application that acts as a trigger for excessive Internet use [8]. Emotions can exacerbate maladaptive Internet use because addictive behaviors tend to become more intense as a result of the mental pleasure the individual derives from them [8]. Excitation, euphoria, and exhilaration frequently reinforce Internet addiction–inducing behaviors. People who are addicted to the Internet experience more positive emotions online than they do offline, and unpleasant feelings intensify the longer a patient is away from the Internet [9]. Thus, picking up a phone to check notifications becomes an unconditional reaction [10]. Because of engaging nature of social media, youngsters usually demonstrate an emotional dependence on their mobiles, and many express anxieties when being separated from them [11]. The relief obtained from using the Internet is what motivates many patients [12]. Cognition may also impact the use of social

media. Those whose thinking is influenced by addiction will experience irrational feelings of anxiety when they anticipate disaster or misfortune [13]. This kind of catastrophic thinking, according to Young [14], may lead to addictive Internet use, which functions as a psychological escape strategy to avoid real or perceived issues. In addition, life events may prompt individuals to engage in harmful Internet use. When individuals lack optimism, lack closeness or strong connections with others, lack self-confidence or compelling hobbies, or feel unsatisfied with their life, they are more susceptible to addiction [15]. Similarly, people who are unhappy about one or more aspects of their lives are more likely to become addicted to the Internet when they are unable to come up with alternative coping mechanisms [16, 17].

Among the four factors described above, emotions are the most directly associated with emotional intelligence, which encompasses interpersonal skills and the ability to recognize and comprehend one's own emotions [18]. When a student has low emotional intelligence, they tend to increase their use of social media. Studies have shown that low emotional intelligence impacts addiction in general [19–21] and Internet addiction in particular [3, 4, 22, 23]. Parker et al. [24] found that emotional intelligence is a relatively good indicator of Internet addiction and that measuring emotional intelligence can help evaluate maladaptive Internet use. Mulawarmana et al. [25] also pointed out that students with high emotional intelligence have better control over their Internet use and are less likely to become addicted to the Internet. Conversely, those with low emotional intelligence tend to spend more time on the Internet, which can make these individuals more likely to develop an Internet addiction. As a result of these findings, emotional intelligence is considered to be a significant predictor of Internet addiction.

In June 2021, the number of Internet users in Vietnam reached 76 million out of a total population of 98 million, accounting for 77% of the population [26]. A 2010 report from Statista predicted that the number of Internet users in Vietnam will reach 82.25 million users by 2025. Therefore, Vietnam can be seen as a potential Internet market in the future. Given the widespread access to and misuse of Internet-connected devices, Internet addiction has become an important issue that parents, teachers, and society as a whole must take into consideration. To increase knowledge about the causes of this disorder and thus facilitate the development of more effective treatments, this study is aimed at evaluating the impact of emotional intelligence and its components on Internet addiction among 744 Vietnamese students. The article consists of five parts. The first part briefly introduces the rationale for the study. The second part reviews the relationship between emotional intelligence and Internet addiction and then proposes a research model. The third part presents the research method. The fourth part summarizes the research results, and the fifth part analyzes the findings in a discussion and conclusion.

2. Literature Review

Studies clearly indicate that pathological use of the Internet has strong association with several of psychological and behavioral problems [27]. Internet addiction is defined as an excessive use of the Internet that causes damage to an individual's personal life, psychological function, and social function and negatively affects job performance and learning behavior [28]. This concept has been used in many studies, such as Li and Chung [29], Akin and Iskender [30], and Caplan and High [31]. In recent studies, the concept of Internet addiction has been used to describe uncontrolled behavior and Internet abuse [32]. Young [14] first introduced this term in the United States in 1996 after noticing unusual symptoms in a friend when he used the Internet too much. Young [14] argued that Internet addiction could be considered an "Impulse Control Disorder" unrelated to addictive stimulants. In addition, Nalwa and Anand [5] defined Internet addiction as a psychological addiction characterized by an increasing dependence on Internet-related activities, unpleasant feelings when offline, and frequent anticipation of Internet use. The majority of people who are addicted to Internet have suffered from a lack of communication skills and emotional skills related to emotional intelligence [33]. Internet addiction adversely affects people's daily activities such as sleep habits [34] and online safety risks [35]. Regarding students, Internet addiction reduces their learning attention [36] and also leads to higher levels of surface learning and lower levels of deep learning [37].

Social intelligence is defined as an individual's store of knowledge about the social world or the capacity to communicate and form relationships with empathy and assertiveness [38]. According to Sofía García-Bullé [39], social intelligence is a result of self-knowledge and the appropriate management of emotions.

Emotional intelligence is considered to be a subset of social intelligence [40]. Emotional intelligence involves the ability to manage one's own emotions, evaluate others' emotions, differentiate between emotions, and the capacity to use this information to guide one's thinking and actions [41]. Goleman [42] defined emotional intelligence as the ability to recognize one's own feelings and the feelings of others, control one's own emotions in relationships with others, and self-motivate when appropriate. Bar-On [43] defined emotional intelligence as a series of noncognitive competencies and skills that influence the successful response to contextual pressure requirements. Regarding personal traits, Petrides and Furnham [44] argued that emotional intelligence is a mixture of traits such as emotionality, self-control, sociality, and well-being. There has been a great deal of discussion about the definition of emotional intelligence among these and other researchers, but the obvious pioneers in this area were Salovey and Mayer [41], who conceptualized emotional intelligence as comprising four aspects: perception of emotion, use of emotion to facilitate thinking, understanding of emotion, and management of emotion. Perception of emotion is the ability to identify and recognize emotions and to appreciate and express them properly [41]. The use of emotion to facilitate thinking is the ability to use emotions to facilitate work and activities [41]. Understanding of emotion is the ability to assess and understand emotions in others, while management of emotion is the ability to

manage one's own emotions and the emotions of others, also known as emotional regulation [41].

Emotional intelligence is a medium-to-strong predictor of addiction-related behaviors [24]. With addiction in general, many studies have shown a positive relationship between emotional intelligence and physical health, psychological regulation, and success in life [45–48]. Similarly, some authors have found a relationship between low emotional intelligence and problems related to addictive substance use [20, 21, 49]. As for Internet addiction in particular, Rosdaniar [50] argued that loneliness is one of the factors contributing to Internet addiction. A person with an Internet addiction will use the Internet to escape from pressure and improve their mood when they feel depressed, anxious, or isolated. In addition, Engelberg and Sjöberg [51] also argued that frequent users tend to be lonely, have deviant values, and lack emotional and social skills to some extent. Therefore, the proposed hypothesis is *Emotional intelligence has a negative impact on Internet addiction.* Figure 1 shows the proposed research model.

3. Methodology

3.1. Measurement

3.1.1. Internet Addiction. Young [52] developed a 20-item scale to measure Internet addiction among Spanish students, which includes personal and social factors. This questionnaire consists of 20 questions, to be answered using a 5-point Likert scale. These questions are intended to determine the extent to which students' Internet use affects their daily routines, social lives, productivity, sleeping habits, and emotions.

Young's scale [52] was also applied in a series of later studies by Young [8] and recent studies by Beranuy et al. [4], Khoshakhlagh and Faramarzi [22], and Hamissi et al. [3]. The s-IAT of Pawlikowski et al. [53] eliminated several items in Young's Internet addiction scale [52] to make it more suitable with current situations (e.g., the question referring to checking electronic mail—a common activity for Internet users—makes it very difficult to differentiate between problematic and nonproblematic users, [54]). In addition, it was also emphasized how biased questions about actions that do not have an equal impact on all groups of people can be [53]. People who do not work cannot respond affirmatively to the question in item 8 regarding whether using the internet impacts work performance. Pawlikowski et al. [53] shortened Young's questionnaire [52] to 12 items for their s-IAT (short Internet Addiction Test). Twelve questions used a 5-point Likert scale, with 1 indicating "totally disagree" and 5 indicating "totally agree" (Table 1). The variables were grouped into two main factors, namely, "time management problems" and "social problems." The scale of Pawlikowski et al. [53] includes psychological attributes and maintains the main indicators of Internet addiction [55]. Pawlikowski et al. [53] revealed s-IAT with good reliability and good indices for convergent, divergent, and incremental validity. Some works have validated the s-IAT, as did Tran et al. [56] in Vietnam and Kutlu et al. [57] in Turkey. In this study, s-IAT is also used.

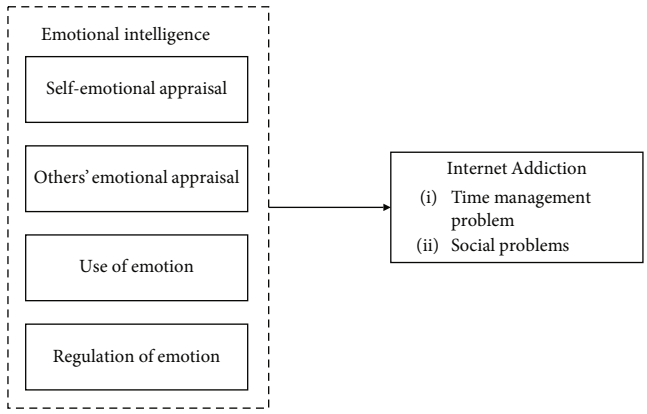

Figure 1: The model of emotional intelligence and internet addiction.

3.1.2. Emotional Intelligence. Based on Salovey and Mayer's [41] research on emotional intelligence, Wong and Law [58] developed an emotional intelligence scale that included four main factors: self-emotion appraisal (SEA), others' emotion appraisal (OEA), use of emotion (UOE), and regulation of emotion (ROE). The scale was validated and has evidence of the practical utility in several countries (e.g., China, [59]; Korea, [60]). The study used the emotional intelligence scale developed by Wong and Law [58] to assess emotional intelligence.

Based on the literature review on Internet addiction and emotional intelligence, the research group created a questionnaire consisting of 24 items using a 5-point Likert scale from 1 (totally disagree) to 5 (totally agree). Details are presented in Table 1.

The questionnaire was translated into Vietnamese by two bilingual teachers who were fluent in English and Vietnamese and had experience using the Internet. They communicated with one another to ensure the Vietnamese version of the questionnaire was appropriate. The draft questionnaire was tested by four lecturers and ten undergraduates who had experience using the Internet. Then, 14 people suggested appropriate words to complete the questionnaire. For modifying the questionnaire, the research team decided to omit 4 items in view of referring from interviewees who tested the scale for trial. They supposed they were confused with synonymous questions and feeling annoyed due to being questioned one problem for several times. The questionnaire was additionally complained of its lengthy. In order to satisfy the surveyors, the team enlisted items with similar meanings and asked them to choose the items they feel most comfortable with. After being edited as per feedback, the questionnaire was sent to ten other students for retesting, all of whom found it transparent and interesting. Finally, the official survey was conducted.

3.2. Participants. The sample included Vietnamese students. The data was collected in July 2021. The data was filtered by removing invalid, incomplete, and unreliable responses. Online questionnaires were sent to students through social media groups managed by the universities, distributed

Table 1: Descriptive statistics.

	N	Minimum	Maximum	Mean	Std. deviation
ia1	744	1	5	3.85	0.743
ia2	744	1	5	3.73	0.950
ia3	744	1	5	3.08	0.977
ia4	744	1	5	3.45	0.868
ia5	744	1	5	2.87	0.975
ia6	744	1	5	2.76	1.016
ia7	744	1	5	2.97	0.971
ia8	744	1	5	2.59	0.919
ia9	744	1	5	2.96	0.900
ia10	744	1	5	2.83	0.926
ia11	744	1	5	3.00	0.946
ia12	744	1	5	2.78	0.906
ei1	744	1	5	3.67	0.736
ei2	744	1	5	3.68	0.744
ei3	744	1	5	3.69	0.747
ei4	744	1	5	3.44	0.713
ei5	744	1	5	3.42	0.758
ei6	744	1	5	3.15	0.711
ei7	744	1	5	3.45	0.780
ei8	744	1	5	3.17	0.785
ei9	744	1	5	3.16	0.763
ei10	744	1	5	3.16	0.771
ei11	744	1	5	3.18	0.800
ei12	744	1	5	3.34	0.849

through student information channels, and shared on the personal pages of many students to ensure that survey participants used the Internet. The total number of responses was 790. After removing faulty responses due to lack of information and dishonesty, the number of reliable responses was 744 (accounting for 94.2%).

Table 2 shows that out of 744 students, men accounted for 37.8%, and women accounted for 62.2%. The number of students attending economics universities accounted for 67.2% participants, while students attending engineering and technology universities accounted for 32.8%.

A total of 485 (65.1%) out of the 744 students who participated in the survey used the Internet for at least 5 hours per day, and more than half of these students spent more than 7 hours on the Internet per day. In terms of experience using the Internet, the majority of students had used the Internet for 5 to 10 years. From this data, it can be inferred that the Internet has become very popular among Vietnamese students.

3.3. Data Analysis. Collected data was encoded and processed via SPSS 20.0 software. The study includes descriptive statistics, reliability testing, exploratory factor analysis, correlation analysis, and linear regression. The reliability of the scale was assessed with Cronbach's alpha coefficients. The purpose of exploratory factor analysis was to test correlations among the variables in the data set. Linear regression analysis and correlation analysis helped determine the impact of emotional intelligence on Internet addiction.

Table 2: Participants.

N = 744	Frequency	Percentage
Gender		
Male	281	37.8
Female	463	62.2
Major		
Engineering and technology	244	32.8
Economics	500	67.2
Internet usage experience (years)		
<3	22	3.0
3–<5	185	24.8
5–<7	256	34.4
7–<10	194	26.1
≥10	87	11.7
Internet usage frequency (hours per day)		
<5	259	34.8
5–<7	224	30.1
7–<11	179	24.1
>11	82	11.0

4. Results

4.1. Descriptive Statistics. In general (see Table 1), Internet addiction variables have mean values from 2.59 to 3.85, with an overall range of values from 1 to 5, showing that the observations are well-distributed across all levels but concentrated mainly on the average. Similarly, the variables measuring emotional intelligence have an average value of 3.15 to 3.69, and the survey subjects have a high average of emotional intelligence.

4.2. Factor Analysis and Reliability. Table 3 included the result of reliability test, numbers of items, Cronbach's alpha, and intraclass correlation.

When calculated Cronbach's alpha, only item IA4 had corrected item-total correlation coefficients = 0.163 < 0.3, so reliability test was conducted again without item IA4. As a result, the observed variables have corrected item-total correlation coefficients > 0.3 (except for item IA4). The variables OEA and ROE have Cronbach's alpha coefficients of 0.809 and 0.806, both higher than 0.8, which indicated the scales are reliable. Other variables are reliable because Cronbach's alpha coefficients range from 0.7 to 0.8 (Table 3). Regarding the intraclass correlation coefficient and 95% confidence interval, the coefficients are all higher than 0.6 (min 0.661), which is acceptable [61, 62]. This contributes to the increase in the reliability of the observations.

Next, the observed variables were tested with EFA. Table 4 showed KMO = 0.811 > 0.5 and Sig. = 0.000, which represented a high level of significance and is appropriate for further analysis. The variables were extracted into six factors with an eigenvalue value of 1.280 > 1, cumulative of

Table 3: Summary of variables.

Names	Number of items	Cronbach's alpha	Intraclass correlation (95% confidence interval)
Self-emotion appraisal (SEA)	3	0.746	0.712-0.776
Others' emotion appraisal (OEA)	3	0.809	0.784-0.831
Use of emotion (UOE)	3	0.700	0.661-0.736
Regulation of emotion (ROE)	3	0.806	0.781-0.829
Time management (TM)	5	0.720	0.687-0.751
Social problems (SP)	6	0.741	0.711-0.769

Table 4: Result of factor analysis EFA.

(a)

KMO and Bartlett's test		
Kaiser-Meyer-Olkin measure of sampling adequacy.		0.811
Bartlett's test of sphericity	Approx. chi-square	5200.120
	Df	253
	Sig.	0.000

(b)

Total variance explained									
Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.893	21.274	21.274	4.893	21.274	21.274	2.691	11.699	11.699
2	2.852	12.399	33.673	2.852	12.399	33.673	2.534	11.017	22.715
3	1.805	7.848	41.521	1.805	7.848	41.521	2.206	9.591	32.307
4	1.532	6.662	48.183	1.532	6.662	48.183	2.203	9.578	41.884
5	1.331	5.786	53.969	1.331	5.786	53.969	2.095	9.109	50.993
6	1.280	5.564	59.533	1.280	5.564	59.533	1.964	8.540	59.533
7	0.940	4.088	63.621						
8	0.895	3.892	67.513						
9	0.747	3.250	70.763						
10	0.731	3.180	73.942						
11	0.630	2.740	76.682						
12	0.603	2.623	79.304						
13	0.575	2.500	81.804						
14	0.553	2.404	84.208						
15	0.520	2.260	86.468						
16	0.509	2.214	88.681						
17	0.470	2.042	90.723						
18	0.444	1.930	92.653						
19	0.426	1.852	94.505						
20	0.351	1.527	96.032						
21	0.330	1.434	97.466						
22	0.307	1.334	98.800						
23	0.276	1.200	100.000						

Extraction method: principal component analysis.

variance extracted 59.533 > 50%, which was shown in total variance explained in Table 5. According to Hair et al. [63] factor loading, >0.4 is considered important, and >0.5 is considered to be of practical significance. In the rotation matrix (see Table 6), observed variables had satisfactory loading coefficients, and the concentration of variables

Table 5: Regression analysis result.

Model	Coefficients						
	Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
	B	Std. error	Beta			Tolerance	VIF
(Constant)	4.199	0.151		27.813	0.000		
Self-emotion appraisal (SEA)	-0.152	0.035	-0.169	-4.397	0.000	0.822	1.217
Others' emotion appraisal (OEA)	0.044	0.033	0.050	1.328	0.185	0.858	1.166
Use of emotion (UOE)	-0.103	0.035	-0.117	-2.971	0.003	0.792	1.263
Regulation of emotion (ROE)	-0.122	0.031	-0.155	-3.990	0.000	0.811	1.233

Regression: IA = 4, 119–0.152∗SEA–0.103∗OEA–0.122∗ROE.

Table 6: Model summary.

R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
0.312	0.098	0.093	0.51635	2.020

Table 7: Rotated component matrix.

	Component					
	1	2	3	4	5	6
ia10	0.776					
ia11	0.718					
ia12	0.668					
ia9	0.589					
ia8	0.518					
ia7	0.457					
ia2		0.750				
ia1		0.744				
ia3		0.636				
ia5		0.574				
ia6		0.552				
ei5			0.867			
ei6			0.833			
ei4			0.782			
ei11				0.844		
ei10				0.811		
ei12				0.761		
ei2					0.867	
ei1					0.818	
ei3					0.632	
ei9						0.791
ei8						0.725
ei7						0.720

according to each factor was obvious, ensuring convergence. Using extraction method as principal component analysis and rotation method varimax would be suitable for linear regression and are also the most commonly used methods [64, 65]. Thus, the results of the exploratory factor analysis were appropriate.

4.2.1. Rotated Component Matrix. A total of 23 variables were extracted with six factors. All loading coefficients were high, greater than 0.5 (only variable ia7 has a low load factor of 0.457) (Table 7). According to Hair et al. [63] factor loading, >0.4 is considered important, and >0.5 is considered to be of practical significance. Thus, the factors were all meaningful and suitable for regression.

4.3. Regression Analysis. The model has a dependent variable which is Internet addiction and four independent variables which are SEA, OEA, UOE, and ROE. To estimate the best relationship and extent of the independent and dependent variables, we carried out a multivariable linear regression analysis to see which variables play an important role in predicting the dependent variable [61].

The model considers the relationship between emotional intelligence and Internet addiction. In Table 5, the coefficients of the independent variables SEA, UOE, and ROE in the model are statistically significant at the 0.05 level, so the mentioned independent variables are all statistically significant. However, the OEA variable is not statistically significant at the 5% level of significance. Furthermore, beta standardized coefficients are all less than 0, showing a negative relationship, which means the higher the emotional intelligence, the lower the Internet addiction.

Table 6 shows that R^2 is equal to 0.098, which means 9.8% of the variance in Internet addiction can be explained by emotional intelligence. In other words, emotional intelligence has an impact on Internet addiction.

5. Discussion and Conclusion

The research results showed that Internet use is prevalent among Vietnamese students. The extended time students spent online reflected their high demand for online learning, searching, and entertainment activities and showed that Internet use has a significant influence on their daily routines. The correlation between emotional intelligence and Internet addiction among Vietnamese students indicated that emotional intelligence has a negative impact on Internet addiction. For each unit of increased emotional intelligence, Internet addiction decreased by 0.344 units; in other words, the higher the students' emotional intelligence, the lower the likelihood and intensity of Internet addiction. This conclusion reinforces the results of earlier studies, which found

that emotional intelligence is an important predictor of Internet addiction [22], emotional intelligence has a significant impact on Internet addiction [66], and low emotional intelligence is a fairly important predictor of addiction in general, including Internet addiction [24]. These findings are expected because, according to Cooper [67], people with a higher level of emotional intelligence enable themselves and others to succeed and build more robust networks. Students with low emotional intelligence are more vulnerable to negative factors such as academic pressure or daily challenges. Thus, they tend to resort to activities to rebalance their emotions and may use the Internet as a way to improve their low mood. Similarly, Rosdaniar [50] argued that people with Internet addiction manage their emotions (moods) by using the Internet to reduce pressure and improve their emotions when they feel depressed or isolated. People with high emotional intelligence may have the ability to control themselves and enhance their social relationships and are therefore less likely to search for virtual relationships on the Internet. In addition, the factors demonstrating personal emotional intelligence, namely, SEA, OEA, and ROE, were shown to have a significant and negative impact on Internet addiction, but the effect of UOE on Internet addiction has not been proven.

The research findings also indicated that improving emotional intelligence would have the effect of reducing Internet addiction. For students, understanding the impact of emotional intelligence on Internet behavior could help improve their efficiency when using the Internet, allowing them to become more productive in learning as well as daily activities. Greater awareness of this issue should be promoted among students, their families, and university faculty. Once students understand its significance, they will be motivated to improve their emotional intelligence by following recommended strategies.

To strengthen SEA, students should take care to monitor their emotions by analyzing how they react to life's situations and seeking feedback from people they trust. Recording their emotional responses to events and being honest with themselves about how they feel about their experiences are essential to improving emotional intelligence. To improve OEA, students should practice their ability to recognize body language and nonverbal communication. They can limit impulsiveness when communicating and learn to recognize when body language does not match language by watching arguments or debates and observing both sides to gain a better understanding of emotional traits. When meeting someone whose emotional responses differ from their own, it is important to explain their viewpoint and make an effort to see things from the other person's perspective. It is also helpful to try to react to external manifestations and pay attention to the inner emotions and internal needs that are implied during conversation. To improve ROE, it is necessary to be open-minded, sociable, empathetic, and willing to share. These traits make it easier to resolve conflicts calmly and decisively. In addition, being mindful of their impact on others and adjusting their outward emotional reactions accordingly will help students maintain relationships. It is important to practice self-control and be true to oneself without being overwhelmed by emotion and practice how to react in similar situations later on. It is apparent that understanding the impact of emotional intelligence on Internet addiction contributes to psychological health improvement in humans, especially students.

Data Availability

The data used to support the findings of this study are available from the first author (nganvh@neu.edu.vn) upon request.

Conflicts of Interest

The authors declare that there is no conflicts of interest regarding the publication of this paper.

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