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Factors influencing social media addiction among Vietnamese adolescents

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Abstract: Social media is integral to modern life, particularly for adolescents who spend considerable time online. However, excessive use poses significant risks to well-being, especially among adolescents who are vulnerable to compulsive social media usage. This study examines factors contributing to social media addiction among Vietnamese adolescents using the Bergen Social Media Addiction Scale (BSMAS) and the Online Fear of Missing Out Inventory (On-FoMO). A cross-sectional study was conducted in Vietnam with participants aged 13 to under 18. Snowball sampling was used to ensure a diverse participant pool. The study excluded individuals with diagnosed mood disorders to maintain population homogeneity. BSMAS, On-FoMO, demographic data, and informed consent were collected via an online survey. The study found a high prevalence of social media addiction among Vietnamese adolescents, with females being more susceptible than males. Vietnamese adolescents struggled to reduce social media usage and felt distressed when restricted. They did not necessarily feel envious or sad when seeing others' happiness online, nor did they seek validation through likes or comments. However, Vietnamese adolescents reported forgetting problems or being late due to SM use. The study results indicate that improving 17 emotional intelligence scales may reduce the extent of SMA among Vietnamese adolescents. The study results also suggest that interventions for social media addiction need to be developed in different fields.

Keywords: Social media addiction, BSMAS, On-FoMO, Vietnamese adolescents.

1. Introduction

Using social media (SM) on smartphones is gaining popularity. Despite many advantages, excessive SM usage is becoming more widely acknowledged as a concern, if not an illness. As of January 2024, 5.35 billion people were using the internet worldwide, with 62.3% being SM users. Asia had the highest number of online users, with over 2.93 billion, followed by Europe, with around 750 million users. In 2022, persons in the 15 to 24 age group used the internet most often worldwide (98%), and 75% of people globally fall into the 15–24 age range

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on average (Statista, 2024). In Vietnam, internet users are expected to rise by 13.1 million (15.04%) from 2024 to 2029. According to several earlier studies examining the prevalence of internet addiction among young Vietnamese adults, 21.5% of participants had an internet addiction. Individuals with an internet addiction were also more likely to struggle with everyday tasks like self-care or to experience mental health issues like anxiety or depression (Tran et al., 2017). Adolescence is a crucial developmental phase that marks the transition from childhood to adulthood. This stage often involves risk-taking and impulsivity, which influence emotions, decision-making, and interactions. These traits, combined with limited self-control and a lack of parental guidance, may make adolescents more prone to excessive SM use.

Previous studies on On-FoMO and BSMAS have provided insights into the effects of On-FoMO and SMA. Previous studies have focused on the relationship between On-FoMO and SMA across different age groups. Most studies using On-FoMO and BSMAS have focused on adolescents or young adults, but few have considered age-specific differences in the relationship between On-FoMO and SMA. Previous studies have not clarified the cultural factors that influence On-FoMO and SMA. Most previous studies have focused on European countries or developed regions, where On-FoMO and the effects of SM may manifest differently compared to Asian countries such as Vietnam, where cultural and social factors play an essential role in SM use behaviour (Cheng et al., 2021; Balcerowska et al., 2022; Ciacchini et al., 2023). Cultural factors may influence how On-FoMO and SMA are expressed and perceived, so further research in countries with different cultures is needed to draw more generalizable conclusions. Overall, the research on On-FoMO and SMA has the potential for further development and expansion, especially when considering cultural factors and studying their relationship with other psychological factors.

In Vietnam, the research on On-FoMO and BSMAS has had some notable results, but there are still some gaps. Most studies in Vietnam focus on the level of SM use or the impact of SM on mental health. Still, few studies specifically examine the concept of On-FoMO and the level of SMA, especially when using specialized scales such as On-FoMO and BSMAS. Domestic studies have not yet analyzed in detail the relationship between On-FoMO and SMA in adolescents and young adults (Doan et al., 2022; Dam et al., 2023). In the context of Vietnamese society, culture and community relations can have a significant impact on how young people experience SM. A better understanding of these factors will help to design culturally appropriate interventions. Combining both scales will allow for a complete analysis of how On-FoMO promotes SMA, providing specific data to identify more accurate predictors of addictive behaviour.

This study is structured into five sections to address some of the above gaps. The next section of the paper will present the theoretical background and methods. The results and discussion section will present and clarify the main findings related to the relationship between On-FoMO factors and the level of SMA. The conclusion section will have policy implications and suggest future research directions.

2. Theoretical background

2.1. Theoretical framework of addictions and social media

According to the United Nations, the transitory stage between childhood and maturity, known as adolescence, is marked by many changes in the body, mind, behaviour, emotions, and society. Negative experiences during early childhood, low self-esteem, and exposure to low or high stimulations can cause individuals to experience negative feelings. The theoretical position is that when engaging in addictive behaviour, individuals may experience a set of dissociative-like experiences that differentiate them from non-addicts (Jacobs, 1988). As a result, people turn to addictive behaviours to numb these unpleasant feelings and maintain equilibrium (Han, 2019; Cho, 2021).

The scientific community has long debated the legitimacy of the term “behavioural” addictions and their existence. Since the mid-1990s, research on excessive internet use has led to the concept of “addiction to technology” (Griffiths, 2005). Terms such as SMA, problematic SM use, and compulsive SM use are used interchangeably to refer to the phenomenon of maladaptive SM use characterized by either addiction-like symptoms or reduced self-regulation (Bányai et al., 2017).

However, due to the historical association between the term “addiction” and substance use disorders, some researchers are concerned that the term SMA may diminish the seriousness of traditional psychiatric disorders and that it is premature to consider the problem as a pathology (Carbonell & Panova, 2017). In keeping with the majority of the literature, the study uses the term SMA, or addictive SM use (in the nonclinical sense), throughout the remainder of the study. SMA is a state where users cannot control their SA usage behaviour despite the negative impacts on work, study, and social relationships. SMA is a maladaptive psychological dependence on SNSs to the point where behavioural addiction symptoms occur (Cao et al., 2020). For the study, addictive SM use is excessive interest in SM, strong motivation, and spending a lot of time and energy using SM to the point where an individual's social activities, interpersonal relationships, school/work, and health and well-being are impaired. Teenagers and young adults are the most susceptible age group among SM users. They spend the most time online, making them the most susceptible to the underlying hazards associated with SM. Young people who overuse SM may experience adverse effects such as sleep disturbance, reduced attention span, negative self-image, and cyberbullying.

2.3. Research models and methodologies

This study used the BSMAS and On-FoMO scales to collect comprehensive SM user behaviour data. The BSMAS measures SMA, while On-FoMO measures online fear of missing out. This combination allows the study to not only determine the level of addiction but also better understand the factors that drive SM use. BSMAS includes frequency, necessity, control, and adverse effects. The study uses the BSMAS scale to determine whether users have manifestations of SMA and to what extent. On-FoMO helps measure the fear of being unable to keep up with information, pressure from online feedback, and the impact of the feeling of missing out on the user's psychological state and social behaviour (Przybylski et al., 2013). By analyzing both the level of addiction and the feeling of missing out, the study can not only determine the level of dependence on SM but also gain a deeper understanding of why users continue to use it despite knowing that they may experience adverse effects. These factors are the main motivations that make users susceptible to addiction (Elhai et al., 2020). From there, the study draws more accurate conclusions about the experience of SM users, helping to provide a theoretical basis for interventions and support measures.

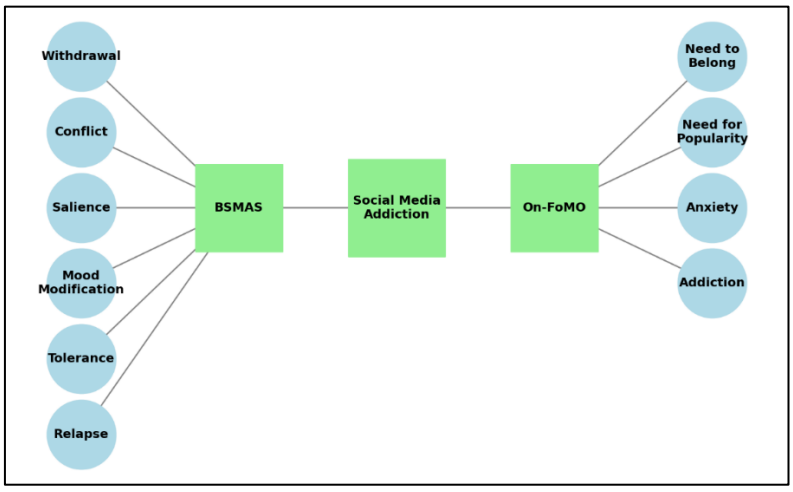

Figure 1. The research model
Source: Authors.

The research model is illustrated in Figure 1, showing SMA in the center with influencing factors from both the BSMAS and On-FoMO scales on either side. BSMAS factors include withdrawal, conflict, salience, mood modification, tolerance, and relapse, while On-FoMO factors encompass need to belong, need for popularity, anxiety, and addiction. This model visually represents the dual influence of these psychological and behavioural factors on SMA, emphasizing their role in sustaining user engagement on social platforms.

2.3.1. Bergen Social Media Addiction Scale (BSMAS)

BSMAS is one of the most commonly used questionnaires for assessing SMA (Lin et al., 2017). The first version of BSMAS was the Bergen Facebook Addiction Scale (BFAS). The primary purpose of the initial BFAS was to look at SMA, which was unique to Facebook. Then, to keep up with the growing number of social network sites and incorporate platform-specific evaluation, the original BFAS was changed and renamed BSMAS.

Several psychometric instruments have been used to assess problematic forms of internet use, such as the Generalized Problematic Internet Use Scale-2 (GPIUS2) (Casale & Fioravanti, 2017), SM Disorder Scale (SMDS) (van den Eijnden et al., 2016), BSMAS (C. S. Andreassen et al., 2016). Despite such variations in the psychometric assessment of the SMA, the BSMAS was used in the current study for three compelling reasons. First, the BSMAS is theoretically motivated and based on the component model of addiction (Griffiths, 2005), which posits that there are six core dimensions of addiction. Second, the BSMAS uses ordered multivariate items and is therefore able to capture a wide range of variation in the SMA. Third, the BSMAS has been adapted, validated, and used in international samples where the BSMAS has demonstrated good psychometric properties (Bányai et al., 2017). BSMAS is a scale to assess the level of SMA in individuals based on six key aspects of behavioural addiction. The six central components are withdrawal, conflict, salience, mood modification, tolerance, and relapse (C. S. Andreassen et al., 2016). Withdrawal is when not using SM, the individual feels uncomfortable or anxious. Conflict is when SM use interferes with daily activities or causes conflict with loved ones. Salience is when the individual spends a lot of time and thoughts on SM, considering it an important activity in life. Mood modification shows that SM is aimed at achieving a sense of comfort or as a way to relieve stress. Tolerance is when the individual needs to spend more time on SM to accomplish the same feeling of comfort as before. Relapse is when the individual has tried to reduce the time spent on SM but has not succeeded.

2.3.2. Online Fear of Missing Out Inventory (On-FoMO)

Online environments increasingly mediate social interactions. The FoMO, or the need to always be aware of what other people are doing, is one of the possible causes of this (Przybylski et al., 2013). Even though FoMO is not strictly related to online activities, FoMO leads to SM. First, it is positively reinforcing when SM fulfils social and esteem demands. Popularity and self-esteem may contribute to FoMO as it is negatively associated with the latter. The Online Fear of Missing Out (On-FoMO) Inventory was developed as FoMO appears to be related to SM use (Sette et al., 2020). Regarding FoMO, there are four aspects to consider: 1. The need to belong, which refers to the desire to be part of a group (Przybylski et al., 2013); 2. The need for popularity involves seeking approval from others and having high self-esteem (Riordan et al., 2020), (Sette et al., 2020); 3. Anxiety refers to the emotional distress experienced when access to SM is blocked or impossible (Beyens et al., 2016); and 4. Addiction refers to the excessive use of SM at a level that interferes with daily activities, such as sleeping, eating, and fulfilling work or school responsibilities (Sette et al., 2020). SM use appears to be increasing daily worldwide. Using the four-factor On-FoMO Inventory in studies on FoMO in Vietnam will ensure that FoMO is addressed across all its dimensions. Individuals experience FoMO while constantly following others online.

3. Methods

3.1. Developing the questionnaire

The questionnaire was developed to measure the level of SMA and psychological and social factors affecting participants' SM use behaviour, focusing on Vietnamese adolescents. The questionnaire consists of 12 questions divided into five parts. Part 1 is demographic information (age, gender, occupation, current location, currently living with). Part 2 is the level of SM use (quantity, frequency, type, purpose). Part 3 measures the level of SMA using the BSMAS scale. Part 4 measures the fear of missing out through the On-FoMO scale. Part 5 is informed consent for participating in the research, acknowledging that the Vietnamese adolescent or dependent participant voluntarily agreed to participate and provide information for this study. The goals and prerequisites of the

study were explained. Participants may only complete the survey questions if they consent to participate by signing the Informed Consent Form. The research has ensured general guidance in Chapter 2 of Guidelines Vietnam Ministry of Health's Evaluation Committee on Ethical Issues in Biomedical Research, specifically the dissemination of consent forms to participate in research, the dissemination of risks and benefits, the assurance of privacy and security, payment and compensation to research subjects (if any), and ending or stopping the study. The BSMAS questionnaire consists of six items that evaluate the frequency of SM usage. Participants respond using a five-point Likert scale ranging from (1) very rarely to (5) very often (Griffiths, 2005). A higher score on the BSMAS suggests a greater likelihood of being at risk of developing SMA. The On-FoMO scale uses a four-point Likert scale, with options ranging from 1 (need to belong) to 4 (addiction) (Sette et al., 2020). A pilot test with the participation of 20 adolescents and experts was conducted. The purpose of this pilot survey was to examine the appropriateness of the scales and to find out opinions on editing and supplementing the scales for each factor to ensure the appropriateness to the research context of Vietnamese adolescents. After that, the questionnaire was adjusted and put into the actual survey.

3.2. Data collection

An online cross-sectional study was conducted in Vietnam from December 2023 to January 2024[1]. The inclusion criteria for being a participant were (1) being aged 13 years to under 18 years and currently residing in Vietnam (based on Civil Law No. 91/2015/QH13 and regulations of the majority SM platforms) (Vietnam National Assembly, 2015); (2) using at least one SM; and (3) access to the internet was required for participation in the study. Individuals with diagnosed mood disorders were excluded to ensure the homogeneity of the studied population. Participants were prompted to submit their email addresses and cellphone numbers to ensure that no one completed the poll more than once. Notwithstanding the request for personal information, anonymity and confidentiality were guaranteed to the participants in the current study. The authors employed the formula for estimating a population mean to determine the sample size for this study. This sample size is calculated according to the sample calculation formula proposed by Yamane (1973). Following this process, a total of 632 Vietnamese adolescents agreed to participate. From the time of response, 42 did not use SM, and 590 used SM at least once.

3.3. Data analysis

The two instruments in question use another Likert-type scale, which means that categorical data analysis was necessary without assuming a normal distribution. Therefore, the confirmatory factor analysis (CFA) estimator and the corrected item-total correlation were used. The research chooses CFA to analyze the data based on some previous studies (Monacis et al., 2017; Doan et al., 2022). Accordingly, CFA analysis is suitable for studies that inherit the entire available scale from previous studies. CFA is applied to assess the validity of the structure. We combine CFA and analyze Cronbach's Alpha reliability, variance, standard deviation, Skewness, and Kurtosis to evaluate the standard error of measurement and the coefficient of determination of the factors. The following criteria were used to determine the goodness of fit: a comparative fit index (CFI) > 0.9, a Tucker-Lewis index (TLI) > 0.9, a root mean square error of approximation (RMSEA) < 0.08, Chi-square/df (CMIN/df) ≤ 3, Goodness of Fit index (GFI) ≥ 0.9, and a standardized root mean square residual (SRMR) < 0.08 (Hu & Bentler, 1999), (Cook et al., 2009). Both descriptive and analytical statistics were used by SPSS version 22 and Amos version 29.

4. Results and discussion

4.1. Descriptive characteristics

Table 1 shows the demographic characteristics of 590 participants, mainly high school pupils aged 16 to under 18. They mostly live in urban areas with their families and use two or more SMs. The survey encompassed 590 respondents, categorized by urban, suburban, and rural or mountainous areas. In the Red River Delta region, 182 participants were recorded, including 92 from urban areas primarily located in Hanoi and Hai Phong, 51 from suburban

[1] https://forms.gle/gZnMW5hyg4xFFPeY9

areas, and 39 from rural and mountainous areas. The North Central region accounted for 137 participants, with 49 residing in urban areas (notably Vinh and Thanh Hoa), 41 in suburban areas, and 47 in rural and mountainous regions. The Southeast region represented the highest concentration of respondents, with 187 individuals, including 119 in urban areas (predominantly Ho Chi Minh City and Binh Duong), 59 in suburban areas, and 9 in rural and mountainous areas. The Mekong Delta region included 84 respondents, including 33 from urban areas (notably Can Tho), 28 from suburban areas, and 23 from rural and mountainous regions. YouTube, Zalo, and Facebook were the most popular SM platforms among Vietnamese adolescents (87.8.1%, 86.4%, and 75.1%, respectively). Talking to friends and searching for information such as images and videos were participants' primary purposes for SM use, with 72.9% and 72.4%, respectively. Most participants spent up to 4 hours daily using SM (33.2%).

Table 1: Demographic characteristics of participants

Variable	Characteristic	N	P	M	SD	Sk	Ku
Gender	Male	251	42.5%	0.425	0.4948	0.302	-1.915
	Female	339	57.5%				
Age	13 - <14 years old	108	18.3%	0.3369	1.4704	-0.430	-1.210
	14 - <15 years old	66	11.2%				
	15 - <16 years old	94	15.9%				
	16 - <17 years old	144	24.4%				
	17 - <18 years old	178	30.2%				
Occupation	Secondary school	175	29.7%	1.703	0.4572	-0.893	-1.207
	High school	415	70.3%				
	Red River Delta	182	30.85%				
	North Central Region	137	23.22%				
	Southeast Region	187	31.69%				
	Mekong Delta	84	14.24%				
Currently living with	Family	552	93.6%	0.936	0.2457	-3.558	10.696
	Others	38	6.4%				
The number of SMs used	Only 1	26	4.4%	1.956	0.2054	-4.454	17.900
	From 2	564	95.6%				
SM used	Facebook	443	75.1%	0.7576	0.32760	-1.205	-0.549
	Zalo	510	86.4%	0.8644	0.34265	-2.134	2.564
	Youtube	518	87.8%	0.8780	0.32760	-2.315	3.372
	Instagram	229	38.8%	0.3881	0.487	0.460	-1.794
	Twitter	221	37.5%	0.3746	0.48442	0.520	-1.736
	Pinterest	216	36.6%	0.3661	0.48215	0.557	-1.695
	Other	225	38.1%	0.3814	0.48613	0.490	-1.766
The primary purpose of using SM	Talk with friends	430	72.9%	0.7288	0.44495	-1.032	-0.938
	Update news	407	69.0%	0.6898	0.46296	-0.823	-1.327
	Listen to music	420	71.2%	0.7119	0.45328	-0.938	-1.124
	Search information	427	72.4%	0.7237	0.44753	-1.003	-0.997
	Play games	408	69.2%	0.6915	0.46226	-0.831	-1.313
	Other	288	48.8%	0.4881	0.50028	0.048	-2.005
Time using SM /day (hours)	< 1 hour per day	15	2.5%	3.463	1.2462	0.027	-1.370
	1 - < 2 hour per day	143	24.2%				
	2 - < 3 hour per day	182	30.8%				
	3 - < 4 hour per day	54	9.2%				
	≥ 4 per day	196	33.2%				

Note: P = Percentage; M = Mean; SD = Standard deviation; Sk = Skewness; Ku = Kurtosis.
Source: Data processing results using SPSS 22 and Amos 29.

4.2. Structural validity of Bergen Social Media Addiction Scale

In the one-factor model, the factor loading value ranged from 0.643 to 0.723, as presented in Table 2. Additionally, the mean score for each item of BSMAS ranged from 3.42 to 3.66 points. The Skewness and Kurtosis absolute coefficients ranged from -0.059 to 0.086 and 1.338 to 1.448, respectively, showing an acceptable range and indicating a reasonably symmetrical distribution. Furthermore, all items of the BSMAS have correlation coefficients with a total variable greater than 0.3 (Nunnally, 1994). This result indicates that the items examined in the BSMAS effectively reflect the latent structure of SMA. A scale is considered highly reliable when the observed variables are closely correlated. This high correlation indicates that the observed variables accurately represent the characteristics and properties of the total variable.

The estimated index and P-value of Table 2 showed signs of SMA in Vietnamese adolescents. Among the scales, BSMAS4 tried to cut down on the use of SM without success, and BSMAS5-Got was troubled by being prohibited from SM use, which had the highest impact levels, 0.675 and 0.651, respectively. In multivariate statistics, a scree plot is a line plot of the factors' or main components' eigenvalues in an investigation. The six BSMAS components were subjected to a CFA, which produced appropriate goodness-of-fit (GOF) scores for the single-factor model (Figure 2). In particular, the value of Chi-square/df was 2.588 < 3; RMSEA was 0.052 < 0.08; CFI was 0.985 > 0.9; TLI was 0.968 > 0.9; GFI was 0.990 > 0.9; SRMS was 0.042 < 0.08 (Cook et al., 2009).

Multigroup analysis helps evaluate the difference in impacts in the model between different values of qualitative variables. The results show differences in SMA levels between men and women and between ages of Vietnamese adolescents (Table 3).

Compared to men, women are more influenced by SM in their academic pursuits and spend more time considering or organizing the usage of SM. However, men are drawn to SM more and more than women are. The age group that utilizes SM the most to forget about personal issues is 15 to under 16 years old, while the age group that uses it the least is 13 to under 15 years old. Vietnamese teens between 14 and 15 are the primary target group. They have made unsuccessful attempts to reduce their usage of SM. Additionally, this age group is the most likely to experience difficulties due to the prohibition of SM usage. These results are consistent with previous research (Andreassen & Pallesen, 2014; Ciacchini et al., 2023). Girls are more susceptible to adverse effects from SM related to mental health, such as anxiety and depression than boys. Adolescent girls tend to use SM to maintain and expand relationships, making them more susceptible to the content and feedback from others.

4.3. Potential Predictors of Social Media Addiction

A variety of parameters related to the participants' SMA status are shown in Table 4. SMA was proposed to have correlations with both scales. The study's Cronbach's alpha internal consistency coefficients were good, with a total scale α value of 0.738. CFA was used to assess the factor structure of the On-FoMO Inventory. The research value of RMSEA was 0.061 and SRMR was 0.041 ≤ 0.08, CFI, NFI, and TLI were 0.910; 0.935; 0.967, respectively ≥0.90 (Hu & Bentler, 1999). Table 2 presents descriptive statistics, item factor loadings, and corrected item-total correlation coefficients for each scale item. The estimate and P-value explained that Vietnamese adolescents did not feel sad seeing the happiness of others on SM and did not feel distant seeing them happy in posts. They did not need people to like or comment on their posts, forget their problems, or be late to appointments because of SM use.

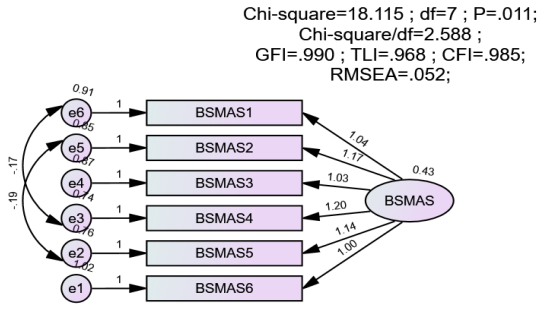

Figure 2: Confirm factor analysis of BSMAS
Source: Data processing results using Amos 29

Table 2: Structural validity of BSMAS

Items	**Addiction component**	**Wording** (1-very rarely, 2-rarely, 3-sometimes, 4-often, and 5-very often)	**Source**	**M**	**SD**	**FL**	**Sk**	**Ku**	**CITC**	**CAID**	**E**	**P**
BSMAS1	Salience	I spend time thinking about or planning using SM.	(C. S. Andreassen et al., 2016), (Doan et al., 2022), (Balcerowska et al., 2022)	3.42	1.17	0.723	0.061	-1.380	0.478	0.747	0.583	***
BSMAS2	Tolerance	I felt an urge to use SM more and more.		3.48	1.20	0.700	0.013	-1.419	0.519	0.737	0.643	***
BSMAS3	Mood modification	I used SM to forget about personal problems.		3.66	1.15	0.689	-0.241	-1.341	0.519	0.737	0.589	***
BSMAS4	Relapse	I tried to cut down on the use of SM without success.		3.49	1.16	0.686	0.017	-1.429	0.555	0.727	0.675	***
BSMAS5	Withdrawal	I was troubled by being prohibited from using SM.		3.43	1.15	0.657	0.086	-1.338	0.533	0.733	0.651	***
BSMAS6	Conflict	I used SM too much to impact my learning negatively		3.50	1.20	0.643	-0.059	-1.448	0.489	0.744	0.546	***
BSMAS: Mean = 21.02, Variance = 23.247, Std. Deviation = 4.82, N of Items = 6, Cronbach's Alpha = 0.771												

Note: FL = Factor loading; CITC = Corrected item-total correlation; CAID = Cronbach's Alpha if item deleted; E = Estimate; P = P-vlalue.

Source: Data processing results using SPSS 22 and Amos 29.

Table 3: Multigroup Analysis of BSMAS

Items	**Standardized regression weights**							**P-value**
	Gender		Age					
	Male	Female	13-14	14-15	15-16	16-17	17-18	
BSMAS1	0.470	0.660	0.690	0.686	0.573	0.509	0.511	***
BSMAS2	0.672	0.628	0.794	0.520	0.794	0.604	0.589	***
BSMAS3	0.586	0.595	0.466	0.466	0.750	0.701	0.590	***
BSMAS4	0.660	0.686	0.612	0.789	0.659	0.670	0.684	***
BSMAS5	0.629	0.665	0.735	0.816	0.583	0.589	0.644	***
BSMAS6	0.518	0.555	0.629	0.435	0.415	0.509	0.607	***

Source: Data processing results using Amos 29.

The research results suggested that SMA was more prevalent in females than males. This is consistent with other studies, which also showed a greater frequency of SMA among young people. This has been linked to increased internet use awareness as many activities, including learning and entertainment, move to online platforms. Another significant discovery is the study's correlation between BSMAS, On-FoMO, and the SMA. The way that SM affects On-FoMO is twofold. Teenagers are aware of a wealth of additional sources of entertainment, knowledge, and relationships out there. Still, they are out of reach due to technology, which offers them ageless and unrestricted communication.

To test the differences between age groups and genders of Vietnamese adolescents, the authors assessed the variance differences between value groups using One-way ANOVA. The results show that the Sig coefficient of Leneve is 0.000 < 0.05. There is a difference in variance between genders and ages. The authors continue to use the Welch test results in the Robust Test of Equality of Means table; the Sig index of the Welch test is 0.000 < 0.05, meaning there is a difference in average On-FoMO between different genders and ages.

These results are consistent with previous research (Doan et al., 2022; Dam et al., 2023). Previous studies have shown that On-FoMO is the main factor influencing SMA in adolescents globally, which is also the case in our study. However, Vietnamese adolescents have some unique characteristics, such as family attachment, social pressure, and the habit of using popular SM such as Facebook, Zalo, and TikTok, making them susceptible to On-FoMO. Moreover, SM is where they relieve pressure from academic and family expectations and seek recognition from friends. Vietnamese adolescents may be influenced by academic pressure and family expectations. Using SM is a way to relieve stress, seek sympathy, or assert oneself, leading to a high risk of On-FoMO and SMA. These factors are the main reasons explaining the level of SMA in this group in Vietnam.

5. Conclusion

5.1. Policy implications

To address adolescents' FoMO and reduce SM overuse, they should limit their time online and set specific time slots for usage. Using timers, turning off notifications to avoid distractions, and reducing the number of regularly used platforms can also help promote healthier habits.

Based on the analysis of the On-FoMO and BSMAS scales by age and gender, some solutions to reduce the negative impacts of SM can be proposed. For the 13-14 age group, boys should be encouraged to participate in practical sports to develop healthy habits. Girls should be educated to use SM consciously and participate in creative activities to increase self-confidence and reduce the pressure of self-comparison. For the 14-15 age group, boys use SM to increase social connection and need guidance to limit usage time, especially in the evening. Girls are easily influenced by images and opinions on SM, so they should participate in activities to improve self-awareness and practice stress management skills. For the 15-16 age group, boys tend to use SM to relieve stress and should be encouraged to develop personal interests. Girls are susceptible to social pressure from SM and must develop critical thinking skills to self-evaluate. Group 16-17, boys with the highest level of On-FoMO, should be encouraged to participate in career orientation and personal development programs to allocate time reasonably. Girls should participate in self-development and mental health courses to have a positive self-image. Groups 17-18, both boys and girls, are at risk of being strongly affected by SM and should be encouraged to develop practical time management skills, participate in extracurricular activities, and practice soft skills. In summary, educating adolescents to use SM responsibly and build social skills will help reduce the risk of SM addiction and its adverse effects on mental health.

5.2. Limitations and further research direction

There are some limitations to this study. First, the study was conducted online for two months, which limits the sample size and may affect the representativeness of the entire sample and the study's findings. Second, the results may be biased because most of the survey questions focused on the preferences and feelings of the respondents.

The small sample size of teenagers who participated in this study may affect its level of external validity. As a result, further research on juvenile addiction to SM may be carried out. Further evaluation of SMA trends and the relationship between SMA and psychological well-being is required. In addition, policymakers want to consider implementing more comprehensive public education programs, maybe in schools, to inform teenagers about the dangers of excessive internet and SM usage and how to control such behaviours.

Table 4: Structural validity of On-FoMO

Items	**Scale 1** (need to belong), 2 (need for popularity), 3 (anxiety), and 4 (addiction)	Sources	M	SD	FL	Sk	Ku	CITC	CAID	E	P
On-FoMO1	I feel bad When I see on a social network that a friend is somewhere I want to go, too.	Przybylski et al. (2013), Beyens et al. (2016), Sette et al. (2020), Riordan et al. (2020)	2.61	0.538	0.855	0.058	-1.019	0.701	0.698	0.583	***
On-FoMO2	I get annoyed when my friends do not tag me in posts.		2.70	0.722	0.944	0.514	-0.951	0.362	0.723	0.543	***
On-FoMO3	I am sad to learn from posts that my friends went to events, and I was not invited.		2.84	0.555	0.952	-0.048	-0.019	0.380	0.722	0.619	***
On-FoMO4	Often, I feel sad seeing on social networks that people are happier than I am.		2.42	0.649	0.895	1.272	0.400	-0.060	0.759	-0.675	0.117
On-FoMO5	I feel distant from people when I see them happy in posts.		2.40	0.645	0.910	1.379	0.657	-0.195	0.769	-0.651	0.389
On-FoMO6	I get annoyed when my posts do not get many likes and comments.		2.69	0.626	0.918	0.345	-0.668	0.677	0.694	0.526	***
On-FoMO7	I only post photos or videos that my friends will like.		2.87	0.687	0.868	0.172	-0.886	0.560	0.703	0.783	***
On-FoMO8	I need people to like or comment on my posts.		2.84	0.555	0.898	-0.048	-0.019	0.055	0.746	0.643	0.081
On-FoMO9	I am indifferent to my friends' reactions to my posts.		2.57	0.650	0.960	0.709	-0.533	0.789	0.682	0.586	***
On-FoMO10	I would like more likes and comments on my posts.		2.82	0.571	0.794	0.011	-0.221	0.503	0.712	0.765	***
On-FoMO11	I get anxious when my cell phone does not have an internet signal.		2.78	0.465	0.780	-0.669	0.018	0.431	0.720	0.781	***
On-FoMO12	I think of ways to connect if I cannot access social networks.		2.88	0.641	0.805	0.110	-0.596	0.668	0.694	0.824	***
On-FoMO13	I think a lot about social networks when I cannot access them.		2.69	0.499	0.822	-0.397	-0.890	0.037	0.746	0.583	0.121
On-FoMO14	I get restless when I cannot access social networks.		2.68	0.490	0.913	-0.490	-1.013	0.237	0.733	0.643	0.045
On-FoMO15	I usually feel irritated by staying disconnected from social networks too long.		3.00	0.600	0.938	0.000	-0.209	0.611	0.702	0.589	***
On-FoMO16	When I am on social networks, I forget my problems.		2.77	0.488	0.833	-0.466	-0.096	-0.514	0.779	-0.615	0.278
On-FoMO17	My family and friends complain that I spend much time connected to social networks.		2.94	0.646	0.795	0.058	-0.605	0.086	0.747	0.522	0.116
On-FoMO18	When I start checking for updates, I find it hard to leave social networks.		2.48	0.523	0.852	0.331	-1.328	0.257	0.732	0.546	0.061
On-FoMO19	I pay more attention to my cell phone than my friends in social situations.		2.58	0.653	0.758	0.680	-0.573	0.482	0.712	0.583	***
On-FoMO20	I am late to appointments because of social network use.		2.21	0.450	0.661	1.948	3.000	-0.004	7.47	-0.643	0.371
On-FoMO: Mean = 53.78, Variance = 23.146, Std. Deviation = 4.811, N of Items = 20, Cronbach's Alpha = 0.738											

Source: Data processing results using SPSS 22 and Amos 29.

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