

Problematic TikTok and Facebook Use Among Bangladeshi Adolescents

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Momotaj Begum^{1,2}, Md. Abu Huraira^{2,3} , Mark Mohan Kaggwa⁴,
Moneerah Mohammad Almerab⁵, David Gozal⁶, Mark D. Griffiths⁷,
Mohammed A. Mamun^{2,8} , and Firoj Al Mamun^{2,8} 

Abstract

Facebook and TikTok are two of the most popular social media platforms, especially among adolescents in Bangladesh. Although generalized problematic social media use among young adults in Bangladesh has been explored, specific problematic use of social media platforms such as Facebook and TikTok among adolescents and their associated risk factors remains underexplored. A sample of 1,183 adolescents was recruited from the Kurigram district of Bangladesh through stratified cluster sampling. They completed a cross-sectional survey containing questions regarding socio-demographic, lifestyle and behavioral, and socio-environmental factors along with the Problematic TikTok Use Scale (PTTUS) and Bergen Facebook Addiction Scale (BFAS). Problematic TikTok use was significantly associated with up to primary level parental education, a history of tobacco smoking, poor parent-child communication, lack of peer support in the past month, truancy in the past month, and serious injury in the past year. Problematic Facebook use was significantly associated with a history of tobacco smoking, lack of peer support in the past month, parental homework check in the past month, and involvement in physical fights in the past year. Linear regression showed that a history of tobacco smoking, poor interactions with parents, lack of peer support in the past month, and serious injury in the past year as significant predictors of problematic TikTok use, whereas family type was a predictor of problematic Facebook use. These findings underscore the multifaceted nature of problematic social media use among adolescents. Culturally appropriate, school-based interventions are needed to foster healthier digital behaviors among Bangladeshi adolescents.

Plain Language Summary

Understanding Problematic TikTok and Facebook Use Among Adolescents in Bangladesh

Social media has become a big part of everyday life for young people, especially platforms such as TikTok and Facebook. While these platforms can help young people connect with friends, share ideas, and learn new things, excessive use can sometimes become problematic. This can lead to issues in daily life, relationships, school performance, and mental

¹Noakhali Science and Technology University, Bangladesh

²CHINTA Research Bangladesh, Savar, Dhaka, Bangladesh

³Jahangirnagar University, Dhaka, Bangladesh

⁴McMaster University Hamilton, Ontario, Canada

⁵Princess Nourah Bint Abdulrahman University, Riyadh, Saudi Arabia

⁶Marshall University, Huntington, WV, USA

⁷Nottingham Trent University, UK

⁸University of South Asia, Dhaka, Bangladesh

Current affiliation: Mohammed A. Mamun is now affiliated with School of Medicine, University of Nottingham, UK.

Corresponding Author:

Firoj Al Mamun, University of South Asia, Dhaka 1348, Bangladesh.

Emails: firojphiju@gmail.com; firoj@southasiauni.ac.bd

Data Availability Statement included at the end of the article



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health. In this study, we looked at how often adolescents in Bangladesh use TikTok and Facebook in ways that may be harmful, and what factors are associated with such use. We surveyed 1,183 students from the Kurigram district using standard questionnaires that assess problematic use of TikTok and Facebook. We also asked about their family background, school life, friendships, and personal behaviors. We found that problematic TikTok use was more likely among adolescents whose parents had lower levels of education, who smoked tobacco, who had poor relationships with their parents, who lacked peer support in the past month, who skipped school, or who had been seriously injured in the past year. Problematic Facebook use was associated with tobacco smoking, lack of peer support, parents checking homework, and involvement in physical fights. Our results show that there are important social, family, and personal factors associated with excessive and potentially harmful social media use. Understanding these risk factors can help parents, teachers, and policymakers develop targeted strategies to promote healthy online habits. By addressing issues such as peer support, family relationships, and risky behaviors, we can help young people enjoy the benefits of social media while avoiding its potential harms.

Keywords

behavioral addiction, Bangladeshi adolescents, problematic social media use, social media addiction, problematic TikTok use, problematic Facebook use

Introduction

Adolescents, typically aged 10 to 19 years (Sacks et al., 2003), undergo significant physical, emotional, and cognitive transformations characterized by identity exploration, increased peer influence, emotional instability, and a growing desire for independence (Pfeifer & Berkman, 2018). During this critical developmental period, social media platforms such as Facebook and TikTok have become an integral part of their daily lives. Adolescents increasingly engage in these platforms, spending substantial time online as both content creators and consumers (Kolotouchkina et al., 2023). However, this widespread use of social media has raised concerns about the development of potentially problematic behaviors, as documented in several studies (Kircaburun et al., 2020; Severo et al., 2020). Globally, Facebook remains the most popular social media platform, with 2.9% of its users aged 13 to 17 years (Herd Digital, 2025). Meanwhile, TikTok has emerged as the most downloaded app, with 672 million downloads in 2022 and 25% of its user base comprising adolescents aged 10 to 19 years (Charle Agency, 2025).

In Bangladesh, approximately 9.5% of the population is aged 13 to 17 years, and the country had approximately 60 million active social media user identities as of January 2025 (Data Reportal, 2025). Social media use is rapidly increasing, with 66.8 million Facebook users, accounting for 37.4% of the population (NapoleonCat, 2025). Moreover, 30.68% of Bangladeshi children aged 5 to 17 years have been reported to use the internet (Yousuf & Bin Yousuf, 2023). Among adolescents aged 17 to 19 years, approximately 71% use social media, with the most popular platforms being Facebook, Messenger, YouTube, WhatsApp, Instagram, and TikTok (Ray

et al., 2025). Moreover, the prevalence of problematic social media use (PSMU) among Bangladeshi school-going adolescents aged 9 to 18 years has been reported to be as high as 26.7% (Jahan et al., 2025).

Although Facebook and TikTok differ in content format and user interactions, both platforms are widely used by Bangladeshi adolescents and rely on algorithm-driven engagement mechanisms, including short-form video content. This type of short-form, algorithmically curated content has been associated with reduced adolescent well-being (Liu et al., 2025). Moreover, Facebook's features, such as constant connections with friends, visible social feedback (likes and comments), and long-standing peer and family connections, make it particularly relevant for examining sustained and compulsive patterns of social media engagement among adolescents. Given their widespread adoption, distinct yet highly engaging design features, and documented associations with problematic use, Facebook and TikTok represent particularly relevant platforms for examining PSMU among adolescents in the Bangladeshi context.

PSMU refers to excessive and poorly controlled engagement with social media that interferes with daily functioning, including academic performance, social relationships, and overall wellbeing (Bányai et al., 2017; Montag et al., 2024). Problematic use of TikTok and Facebook has been associated with a range of adverse health outcomes among adolescents. PSMU can lead to attention problems and lower academic performance (Montag et al., 2024). Adolescents also face psychological challenges such as depression, anxiety, and sleep disturbances, as well as physical health issues (e.g., reduced physical activity, vision issues, and headaches) (Bozzola et al., 2022). Moreover, PSMU has been associated with

heightened aggression, anger, hostility, and diminished verbal communication (Rustamov et al., 2023; Zhang et al., 2022). The potentially addictive nature of these social media platforms, combined with their embedded algorithms aiming to predict user preferences, exacerbates these risks, particularly among adolescents with limited self-control (Yang, 2023).

A prospective longitudinal cohort study in the United States found that increased social media use over time was associated with higher depressive symptoms, indicating a potential pattern of problematic social media use among adolescents (Nagata et al., 2025). A large Hungarian survey of 5,961 adolescents reported that 4.5% were at risk of PSMU which was associated with lower self-esteem, more depressive symptoms, and higher engagement with social media use (Bányai et al., 2017). While social media use among adolescents has been associated with various risks, emerging evidence highlights that these platforms can also provide positive outcomes, such as social connection, peer support, and access to resources for wellbeing (Weinstein et al., 2021). A systematic review by Haddock et al. (2022) found that digital technology use including social media, the internet, and videogames can aid brain development, cognitive growth, and social-emotional skills. This suggests that while some patterns of social media use may be problematic, these platforms also offer opportunities for learning, social connection, and skill development, underscoring the importance of examining both beneficial and harmful aspects of engagement (Hutton et al., 2024).

Several factors influence the likelihood of PSMU among adolescents. Studies have shown that gender plays a small effect in shaping social media behaviors, with females being slightly more affected, particularly in terms of Facebook use (Marino et al., 2018). Studies have also found that rural adolescents report higher levels of problematic internet use than urban adolescents (Kormas et al., 2011). Additionally, reduced attachment to peers and parents has been identified as a risk factor for symptoms of problematic Facebook use (PFU) among schooled adolescents (Badenes-Ribera et al., 2019). Lifestyle factors such as physical inactivity, prolonged social media use, and spending five or more hours daily on Facebook, have also been associated with PFU (Mamun & Griffiths, 2019). School-related factors, including higher academic stress, poorer academic performance, and increased bullying victimization have been significantly associated with addiction to TikTok (Chao et al., 2023). Similarly, family environment factors, including poor relationships with parents along with negative parenting styles, and lower parental education levels can significantly influence addictive TikTok use behaviors among adolescents (Chao et al., 2023).

Understanding these factors is crucial for developing targeted interventions to address PSMU.

In Bangladesh, research on problematic Facebook and TikTok use among adolescents remains scarce. Existing studies have primarily explored PFU among university students, highlighting associations between online activities, behavioral factors, and mental health (Al-Mamun et al., 2022; Mamun & Griffiths, 2019; Sayeed, et al., 2020). For example, 39.7% of university students were identified as problematic Facebook users, with physical inactivity, sleep disturbances, time spent on Facebook, and depression identified as associated factors (Mamun & Griffiths, 2019). A lower prevalence (29.1%) was recorded during the COVID-19 pandemic, where being in a relationship, using the internet for more than 5 hr daily, depression, and anxiety were significant factors for PFU among Bangladeshi university students (Al-Mamun et al., 2022). However, problematic TikTok use (PTTU) has rarely been studied among adolescents in Bangladesh. Moreover, few studies have investigated the relationship between school-related factors, family environment, and either PFU or PTTU among adolescents. This gap highlights the need for targeted research to inform evidence-based interventions and policies.

The present study draws on social learning theory (SLT), which posits that individuals learn behaviors through observation, imitation, and reinforcement within their social environment (Bandura, 1977). SLT suggests that social media platforms such as Facebook and TikTok can shape adolescent behavior by offering peer connection, opportunities to follow influencers, and exposure to engaging content. Adolescents observe and imitate peers and role models, and gendered social expectations shape online engagement. This theory helps explain why adolescents who lack positive social guidance or experience negative social interactions may imitate maladaptive online behaviors. Similarly, engagement in risky behaviors and emotional difficulties may reinforce reliance on social media as a coping mechanism. The present study used SLT to interpret similarities and differences in problematic Facebook and TikTok use and to contextualize how social, behavioral, and environmental factors jointly shape these behaviors.

Based on the aforementioned literature, it was hypothesized that (i) PFU and PTTU would differ according to sociodemographic characteristics, including gender and place of residence (H_1), (ii) engagement in health-risk behaviors, including tobacco use, alcohol consumption, and illicit drug use, would be positively associated with PFU and PTTU (H_2), (iii) poor parent-adolescent communication and limited parental monitoring would be associated with higher levels of PFU and PTTU (H_3), (iv) lower peer support and weaker peer attachment would be associated with increased PFU and

PTTU (H₄), (v) adverse school-related experiences, including bullying victimization and truancy, would be associated with elevated PFU and PTTU (H₅), and (vi) emotional and behavioral difficulties, including loneliness and involvement in physical fights, would be positively associated with PFU and PTTU (H₆).

By addressing key gaps in the existing literature, the present exploratory study investigated PFU and PTTU among school-going adolescents in Bangladesh, a population and platform combination that remains underexamined. More specifically, the study examined the prevalence of Facebook and TikTok use and tested hypothesized associations between PFU and PTTU and sociodemographic, lifestyle-behavioral, and socio-environmental factors. The objectives of the study were to: (i) estimate the prevalence of Facebook and TikTok use; (ii) determine the levels of PFU and PTTU using psychometric scales; (iii) explore the associations between the study variables and PFU and PTTU; and (iv) identify factors associated with increased risk of PFU and PTTU. By addressing these objectives, the study aimed to provide a comprehensive understanding of PSMU among Bangladeshi adolescents.

Methods

Study Design, Setting, and Procedure

A cross-sectional study was conducted between September and October 2024 among school-going adolescents in the Phulbari upazila of the Kurigram district in Bangladesh. Kurigram was selected because it is an economically disadvantaged and disaster-prone district, representing an under-researched context where adolescents may be particularly vulnerable to psychological stressors and potentially problematic digital behaviors (Prothom Alo, 2017). This district includes both urban and rural secondary schools, allowing for examination of social media use patterns across diverse geographic and socioeconomic settings. In addition, the presence of existing collaborations with local schools and community organizations facilitated participant recruitment, permission procedures, and safe data collection. This logistical support ensured the practical feasibility of the study while maintaining ethical and methodological standards. A two-stage stratified cluster sampling technique was employed to recruit participants. In the first stage, schools were stratified by geographical location (urban vs. rural), followed by a random selection of eight schools, three from urban areas and five from rural regions. In the second stage, four specific Grades (7, 8, 9, and 10) were targeted within each selected school, and all students enrolled in these grades were invited to participate in the study.

The inclusion criteria for participation were: (i) being present in class during the survey, and (ii) being a student in Grades 7, 8, 9, or 10. Students were excluded if they (i) did not provide informed consent, (ii) had disabilities that prevented participation, (iii) were absent during data collection, or (iv) submitted incomplete responses for the outcome variable. Participants were first screened for active Facebook and TikTok use. Only users of a given platform completed the corresponding problematic use scale, yielding platform-specific analytic samples.

Measures

Socio-Demographic Information. The survey included a range of sociodemographic variables, including participants' residence location, gender, age, grade, family type, parental education, and occupational status. Participants' age was categorized into three distinct groups: 12 to 13 years, 14 to 15 years, and 16 to 18 years, whereas their level of education was divided into four groups: Grade 7, Grade 8, Grade 9, and Grade 10. Parental education levels were categorized into three groups: up to primary (combining no formal education and primary level), secondary (high school and college), and tertiary (undergraduate, degree, postgraduate degree, and PhD). Father's occupation comprised four categories: job, business, farming, and other (including unemployed and daily wage earners). Mother's occupation comprised two categories: homemaker and non-homemaker (including business, job holder, and maid). Participants reported their parental education and occupation if they lived in the same household.

Lifestyle-Related and Behavioral-Related Variables. Participants were asked about lifestyle-related and behavioral-related variables, including their lifetime history of tobacco smoking, alcohol consumption, and the use of any illicit drugs. Each of these three questions had two response options ("yes" or "no"). These questions were adopted from a study by Khan et al. (2020) which utilized items from the Global School-based Student Health Survey (GSHS) conducted among Bangladeshi school-going adolescents aged 11 to 18 years. These behaviors were included because previous research has shown that engagement in risk behaviors is associated with higher likelihood of PSMU among adolescents (Vassey et al., 2022).

Socio-Environmental-Related Variables. Participants were asked about their socio-environment-related information which were responded to in a binary response ("yes" or "no") along with a timeframe ("past month," "past year," and "lifetime"). Lifetime factors included whether

their parents had a history of tobacco or drug use and whether they had any close friends. Past year-related factors were used to assess their involvement in physical fights, experiences of serious injury which led them to miss at least one school day, and feelings of loneliness. Lastly, past month-related factors included whether their homework was checked by parents, lack of communication with parents, lack of peer support, truancy, and experience of bullying (i.e., being bullied). These items were adopted from a GSHS, ensuring relevance to Bangladeshi adolescents and allowing comparison with prior research (Khan et al., 2020).

Problematic Facebook Use

The Bergen Facebook Addiction Scale (BFAS) (Andreassen et al., 2012) was used to assess problematic Facebook use. The BFAS consists of six questions, each reflecting one of six core dimensions of addiction: salience, mood modification, tolerance, withdrawal, conflict, and relapse. Responses are recorded on a 5-point Likert-type scale ranging from 1 (*very rarely*) to 5 (*very often*) with scores ranging from 6 to 30. An example item is: “How often have you felt an urge to use Facebook more and more.” The scale was previously used among Bangladeshi students demonstrating good psychometric properties (Al-Mamun et al., 2022). In the present study, the Cronbach’s alpha and McDonald’s omega were both .77.

Problematic TikTok Use

The Problematic TikTok Use Scale (PTTUS) was used to assess problematic TikTok use. The PTTUS was adapted from the aforementioned Bergen Facebook Addiction Scale (Andreassen et al., 2012) by replacing the word ‘Facebook’ with ‘TikTok’ in the six self-report items. Responses are recorded on a 5-point Likert-type scale ranging from 1 (*very rarely*) to 5 (*very often*) with scores ranging from 6 to 30. An example item is: “How often have you felt an urge to use TikTok more and more.” In the present study, the Cronbach’s alpha and McDonald’s omega were both .80.

For the present study, the scale was translated and validated following a standardized forward and backward translation procedure (Beaton et al., 2000). The translation procedure involved two independent bilingual translators, both native speakers of Bangla, who initially translated the original English scale into Bangla. These translations were then compared and synthesized into a single version. A third bilingual translator, who was unaware of the original scale, performed a back-translation of the Bangla version into English. An expert committee reviewed the back-translated version against the original

English questionnaire to ensure conceptual and linguistic accuracy, making necessary adjustments where required. To ensure the translated scale’s clarity, cultural relevance, and comprehensibility, the pre-final version was pilot tested among 30 students. Feedback from this pilot testing was used to make final adjustments to the scale. Data collected during the pilot phase were excluded from the formal analysis.

To validate the adaptation of the tools, exploratory factor analyses (EFAs), and confirmatory factor analysis (CFA) were carried out. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .85 ($p < .001$), indicating the suitability of the data for factor analysis. The EFA showed that the six items explained 50.81% of the variance, with the scale loading onto a single factor. The CFA yielded good and acceptable goodness of fit indices: ($\chi^2/df = 3.54$, RMSEA = 0.07 [90% CI (0.04, 0.09)], SRMR = 0.03, CFI = 0.97, GFI = 0.98). Standardized regression weights ranged between .51 and .74 and squared multiple correlation values ranged between .26 and .55, further supporting the scale’s validity. The results of the EFA and CFA confirm that the scale is a valid and reliable tool for assessing PTTU among adolescents.

Ethical Considerations

All procedures in the present study adhered to the ethical standards guideline outlined in the Helsinki Declaration of 1975, as revised in 2013. Ethical approval for the present study was obtained from the Institutional Review Board of CHINTA Research Bangladesh [Ref: chinta/2024/08(1)]. Participants were informed that their involvement was voluntary, and they could withdraw from the study at any time. Additionally, no compensation was provided for participation. Prior to data collection, approval was obtained from school authorities, including school principals and class teachers. Students received a written informed consent form, which required review and approval by their parents or guardians before participating in the survey that was conducted by the research team. To ensure clarity, any questions or concerns regarding the survey were addressed by class teachers and research team members present during the survey. A pilot study was carried out with 30 students to assess the clarity and readability of the survey, but these responses were excluded from the final analysis.

Statistical Analysis

Survey items were entered into *Google Forms* for organization and later analyzed using Statistical Package for Social Science version 26 and AMOS version 23. Descriptive statistics, including frequencies, percentages,

means, standard deviations, skewness, and kurtosis were calculated to summarize the data. Analyses were conducted using available-participant data. Therefore, denominators vary slightly across variables due to item-level missing responses. Normality assumptions were checked using skewness ($<|2|$) and kurtosis ($<|7|$) values (Byrne, 2010). In the CFA, the goodness of fit values was determined using the root mean square error of approximation (RMSEA), standardized root mean square residuals (SRMR), comparative fit index (CFI), and goodness of fit index (GFI). If RMSEA and SRMR are lower than 0.05 they indicate good fit while RMSEA and SRMR lower than 0.08 suggest an adequate fit; CFI and GFI higher than 0.95 indicate good fit, and CFI and GFI higher than 0.90 indicate acceptable fit (Hu & Bentler, 1999).

Mean comparisons were conducted to examine differences in study variables. Independent sample *t*-tests were used to compare means between two groups, while one-way ANOVA was employed to compare means across three or more groups. Additionally, chi-square tests were utilized to examine associations between categorical study variables and both TikTok and Facebook use. These relationships helped identify significant differences and relationships within the data. To identify potential factors associated with PFU and PTTU, linear regression was performed. Multicollinearity among predictor variables was assessed using the variance inflation factor and tolerance values, with VIF <5 and tolerance >0.2 being considered as acceptable. The normality of the residuals was verified using normal P-P plot, which indicated that the residuals were approximately normally distributed. This ensured the validity of the regression assumptions. All results were deemed as statistically significant if the *p*-value was $<.05$, ensuring that only significant results were considered in the interpretation of findings.

Results

Characteristics of the Participants

Characteristics of the participants are presented in Table 1 ($N = 1,183$, mean age = 14.36 years [$SD \pm 1.30$]), noting that totals vary slightly across variables due to item-level missing responses. Among them, 52.7% were girls, 50.8% were from urban areas, 54.4% were aged between 14 and 15 years, 32.6% were in Grade 7, and 70.2% belonged to nuclear families. Regarding parental education and occupation, secondary-level education was the highest for both fathers (47.7%) and mothers (54.2%). The most common occupation for fathers was farming (43.0%), while 90.2% of the mothers were homemakers. Approximately 7.0% of participants had a history of tobacco smoking, while both alcohol consumption and

illicit drug use were reported in 4.5% of the cohort. In the past month, 72.1% of the participants reported poor communications with their parents, 52.1% indicated that their homework was rarely checked by their parents, 36.8% lacked peer support, 32.9% had truancy issues, and 33.1% had experienced bullying. Additionally, parental tobacco or drug use was observed in 20.3% of cases, and 58.1% of the participants reported having no close friends. In the past year, 36.5% of participants had been involved in physical fights, 64.7% had serious injuries, and 14.1% reported feelings of loneliness (Table 1).

TikTok Use

Chi-square tests showed several significant associations with TikTok use among participants. Adolescents from rural areas had a higher rate of TikTok use compared to those from urban areas (46.7% vs. 40.8%, $\chi^2 = 4.283$, $p = .038$). Participants' age was strongly associated with TikTok use, with 52% of adolescents aged 16 to 18 years reporting TikTok use, compared to 41.3% in the 14 to 15 age group and 41.4% in the 12 to 13 age group ($\chi^2 = 8.467$, $p = .014$). Adolescents from joint families had higher rates of TikTok use compared to those from nuclear families (49.4% vs. 41.8%; $\chi^2 = 5.546$, $p = .019$). The educational level of adolescents' mothers and the occupations of their fathers were also significantly associated with TikTok use. More specifically, adolescents whose mothers had secondary-level education had higher rates of TikTok use (47.2%) compared to those whose mothers had tertiary-level education (40.9%) or primary-level education (39.6%) ($\chi^2 = 6.188$, $p = .045$). Adolescents whose fathers were businessmen had higher TikTok use (51.8%) compared to those whose fathers were employed in jobs (43.4%), farming (40.3%), or other professions (37.0%) ($\chi^2 = 14.081$, $p = .003$). Adolescents with a tobacco smoking history were more likely to use TikTok compared to the non-smokers (54.2% vs. 42.9%; $\chi^2 = 4.011$, $p = .045$). Adolescents who had no close friends were more likely to use TikTok compared to those who had close friends (48.3% vs. 37.3%; $\chi^2 = 14.237$, $p < .001$). Adolescents involved in a physical fight in the past year were more likely to use TikTok compared to those who had not engaged in a fight (48.1% vs. 41.1%; $\chi^2 = 5.467$, $p = .019$) (Table 1).

Facebook Use

Adolescents from urban areas had significantly higher rates of Facebook use compared to those from rural areas (43.6% vs. 38.0%; $\chi^2 = 3.868$, $p = .049$). In terms of gender, boys were more likely to use Facebook compared to girls (55.1% vs. 24.9%; $\chi^2 = 111.774$, $p < .001$), and older adolescents (16–18 years) were more likely to

Table 1. Characteristics of the Participants and Relationship with TikTok and Facebook Use (N = 1,183).

| Variables | Total (n; %) | TikTok user | | Facebook user | |
|--|--------------|-------------|--------------------------------|---------------|-------------------------------|
| | | Yes (n; %) | χ^2 test value (p- value) | Yes (n; %) | χ^2 test value (p-value) |
| Socio-demographic variables | | | | | |
| Location | | | | | |
| Urban | 601 (50.8%) | 245 (40.8%) | 4.283 (.038) | 262 (43.6%) | 3.868 (.049) |
| Rural | 582 (49.2%) | 272 (46.7%) | | 221 (38.0%) | |
| Gender | | | | | |
| Boy | 624 (52.7%) | 289 (46.3%) | 3.661 (.056) | 344 (55.1%) | 111.774 (<.001) |
| Girl | 559 (47.3%) | 228 (40.8%) | | 139 (24.9%) | |
| Age | | | | | |
| 12–13 years | 304 (26.0%) | 126 (41.4%) | 8.467 (.014) | 107 (35.2%) | 31.564 (<.001) |
| 14–15 years | 637 (54.4%) | 263 (41.3%) | | 237 (37.2%) | |
| 16–18 years | 229 (19.6%) | 119 (52.0%) | | 130 (56.8%) | |
| Grade | | | | | |
| Grade 7 | 382 (32.6%) | 164 (42.9%) | 3.592 (.309) | 130 (34.0%) | 15.408 (.001) |
| Grade 8 | 353 (30.2%) | 160 (45.3%) | | 138 (39.1%) | |
| Grade 9 | 298 (25.5%) | 118 (39.6%) | | 141 (47.3%) | |
| Grade 10 | 137 (11.7%) | 66 (48.2%) | | 65 (47.4%) | |
| Family type | | | | | |
| Nuclear | 792 (70.2%) | 331 (41.8%) | 5.546 (.019) | 307 (38.8%) | 4.881 (.027) |
| Joint | 336 (29.8%) | 166 (49.4%) | | 154 (45.8%) | |
| Father education | | | | | |
| Up to primary | 393 (34.6%) | 168 (42.7%) | 3.148 (.207) | 153 (38.9%) | 6.044 (.049) |
| Secondary level | 541 (47.7%) | 252 (46.6%) | | 215 (39.7%) | |
| Tertiary level | 201 (17.7%) | 80 (39.8%) | | 98 (48.8%) | |
| Mother Education | | | | | |
| Up to primary | 369 (32.3%) | 146 (39.6%) | 6.188 (.045) | 137 (37.1%) | 5.438 (.066) |
| Secondary level | 618 (54.2%) | 292 (47.2%) | | 254 (41.1%) | |
| Tertiary level | 154 (13.5%) | 63 (40.9%) | | 74 (48.1%) | |
| Father's occupation | | | | | |
| Job | 173 (14.9%) | 75 (43.4%) | 14.081 (.003) | 88 (50.9%) | 11.448 (.010) |
| Business | 334 (28.8%) | 173 (51.8%) | | 141 (42.2%) | |
| Farmer | 499 (43.0%) | 201 (40.3%) | | 183 (36.7%) | |
| Other | 154 (13.3%) | 57 (37.0%) | | 59 (38.3%) | |
| Mother's occupation | | | | | |
| Homemaker | 1049 (90.2%) | 467 (44.5%) | 3.058 (.080) | 422 (40.2%) | 1.669 (.169) |
| Non-homemaker | 114 (9.8%) | 41 (36.0%) | | 53 (46.5%) | |
| Life-style and behavior-related variables | | | | | |
| Ever smoked tobacco | | | | | |
| No | 1100 (93.0%) | 472 (42.9%) | 4.011 (.045) | 429 (39.0%) | 21.695 (<.001) |
| Yes | 83 (7.0%) | 45 (54.2%) | | 54 (65.1%) | |
| Ever drank alcohol | | | | | |
| No | 1130 (95.5%) | 493 (43.6%) | 0.056 (.812) | 461 (40.8%) | 0.011 (.918) |
| Yes | 53 (4.5%) | 24 (45.3%) | | 22 (41.5%) | |
| Ever used illicit drugs | | | | | |
| No | 1130 (95.5%) | 497 (44.0%) | 0.803 (.370) | 461 (40.8%) | 0.011 (.918) |
| Yes | 53 (4.5%) | 20 (37.7%) | | 22 (41.5%) | |
| Socio-environmental factors | | | | | |
| Parents rarely check homework past month | | | | | |
| No | 567 (47.9%) | 263 (46.4%) | 3.184 (.074) | 236 (41.6%) | 0.284 (.594) |
| Yes | 616 (52.1%) | 254 (41.2%) | | 247 (40.1%) | |
| Poor communication with parents' past month | | | | | |
| No | 330 (27.9%) | 146 (44.2%) | 0.054 (.816) | 151 (45.8%) | 4.603 (.032) |
| Yes | 853 (72.1%) | 371 (43.5%) | | 332 (38.9%) | |
| Lack of peer support past month | | | | | |
| No | 748 (63.2%) | 311 (41.6%) | 3.733 (.053) | 307 (41.0%) | 0.039 (.844) |
| Yes | 435 (36.8%) | 206 (47.4%) | | 176 (40.5%) | |
| Parental tobacco or drug use | | | | | |
| No | 943 (79.7%) | 415 (44.0%) | 0.177 (.674) | 377 (40.0%) | 1.389 (.239) |
| Yes | 240 (20.3%) | 102 (42.5%) | | 106 (44.2%) | |

(continued)

Table 1. (continued)

| Variables | Total (n; %) | TikTok user | | Facebook user | |
|-------------------------------------|--------------|-------------|--------------------------------|---------------|-------------------------------|
| | | Yes (n; %) | χ^2 test value (p- value) | Yes (n; %) | χ^2 test value (p-value) |
| Truancy past month | | | | | |
| No | 794 (67.1%) | 340 (42.8%) | 0.762 (.383) | 291 (36.6%) | 17.451 (<.001) |
| Yes | 389 (32.9%) | 177 (45.5%) | | 192 (49.4%) | |
| Bullied past month | | | | | |
| No | 791 (66.9%) | 334 (42.2%) | 2.118 (.146) | 311 (39.3%) | 2.256 (.133) |
| Yes | 392 (33.1%) | 183 (46.7%) | | 172 (43.9%) | |
| Had no close friend | | | | | |
| No | 496 (41.9%) | 185 (37.3%) | 14.237 (<.001) | 211 (42.5%) | 1.036 (.309) |
| Yes | 687 (58.1%) | 332 (48.3%) | | 272 (39.6%) | |
| Had physical fight in past year | | | | | |
| No | 751 (63.5%) | 309 (41.1%) | 5.467 (.019) | 291 (38.7%) | 3.683 (.055) |
| Yes | 432 (36.5%) | 208 (48.1%) | | 192 (44.4%) | |
| Had serious injury in past year | | | | | |
| No | 418 (35.3%) | 177 (42.3%) | 0.484 (.486) | 166 (39.7%) | 0.333 (.564) |
| Yes | 765 (64.7%) | 340 (44.4%) | | 317 (41.4%) | |
| Experienced loneliness in past year | | | | | |
| No | 1016 (85.9%) | 439 (43.2%) | 0.713 (.398) | 392 (38.6%) | 15.024 (<.001) |
| Yes | 167 (14.1%) | 78 (46.7%) | | 91 (54.5%) | |

Note. Totals for some variables vary slightly due to item-level missing responses. Bold values indicate significant results.

use Facebook compared to other age groups ($\chi^2 = 31.564, p < .001$), particularly students in Grade 10 who reported higher rates ($\chi^2 = 15.408, p = .001$). Adolescents from joint families were more likely to use Facebook compared to those from nuclear families (45.8% vs. 38.8%; $\chi^2 = 4.881, p = .027$). Adolescents whose fathers had tertiary-level education ($\chi^2 = 6.044, p = .049$) and jobs ($\chi^2 = 11.448, p = .010$) had a higher Facebook use rate compared to others. Adolescents with a history of tobacco smoking were more likely Facebook users compared to the non-smokers (65.1% vs. 39.0%; $\chi^2 = 21.695, p < .001$). Additionally, adolescents who had poor communication with their parents in the past month had higher Facebook use rates compared to those who did not (45.8% vs. 38.9%; $\chi^2 = 4.603, p = .032$). Adolescents with a history of truancy were more likely to use Facebook compared to those without such history (49.4% vs. 36.6%; $\chi^2 = 17.451, p < .001$). Finally, adolescents who experienced loneliness were more likely to use Facebook compared to those who did not (54.5% vs. 38.6%; $\chi^2 = 15.024, p < .001$) (Table 1).

Mean Differences Between the Study Variables and Problematic TikTok Use

Table 2 presents mean differences in PTTU scores. The overall mean score for PTTU was 11.40 out of 30 ($SD \pm 4.79$). Adolescents whose fathers had an education level up to primary school had significantly higher mean scores compared to those whose fathers had a secondary

education level and tertiary education level ($F = 5.717, p = .004$). Similarly, adolescents whose mothers had a primary-level education had a higher mean score compared to those whose mothers had tertiary and secondary education ($F = 5.175, p = .006$). Students with past-year smoking experience had a higher mean score compared to non-smokers ($t = 2.446, p = .001$). Additionally, students who had poor communication with their parents had a higher mean score than those who did not. The present study found that participants with a history of smoking were at a significantly higher risk of PTTU ($t = 2.415, p = .016$). Adolescents lacking peer support during the past month had significantly higher mean scores than those without such experience ($t = -2.850, p = .005$). Moreover, students involved in truancy during the past month had significantly higher mean scores than those who were not involved in such activities ($t = -2.519, p = .012$). Finally, students who experienced serious injury due to physical fights in the past year had significantly higher mean scores than those who did not ($t = 3.733, p < .001$).

Differences Between the Study Variables and Problematic Facebook Use

Table 2 presents the mean differences in PFU scores. The overall mean score for PFU was 11.86 out of 30 ($SD \pm 4.72$). Adolescents with a tobacco smoking history in the past year had a significantly higher mean score compared to those without a smoking history

Table 2. Differences Between the Study Variables and Problematic TikTok and Facebook Use.

| Variables | Problematic TikTok use (n = 517) | | Problematic Facebook use (n = 483) | |
|--|----------------------------------|---------------------|------------------------------------|---------------------|
| | Mean ± SD | t/F value (p-value) | Mean ± SD | t/F value (p-value) |
| Socio-demographic variables | | | | |
| Location | | | | |
| Urban | 11.51 ± 4.91 | 0.540 (.589) | 11.91 ± 4.81 | 0.297 (.767) |
| Rural | 11.29 ± 4.68 | | 11.79 ± 4.62 | |
| Gender | | | | |
| Boy | 11.57 ± 4.98 | 0.940 (.347) | 11.93 ± 4.67 | 0.547 (.584) |
| Girl | 11.17 ± 4.52 | | 11.67 ± 4.85 | |
| Age | | | | |
| 12–13 years | 11.33 ± 4.62 | 2.152 (.117) | 11.97 ± 4.79 | 1.798 (.167) |
| 14–15 years | 11.09 ± 4.69 | | 11.51 ± 4.90 | |
| 16–18 years | 12.18 ± 5.13 | | 12.48 ± 4.29 | |
| Grade | | | | |
| Grade 7 | 11.26 ± 4.49 | 0.223 (.881) | 11.83 ± 4.91 | 0.023 (.995) |
| Grade 8 | 11.42 ± 5.00 | | 11.89 ± 4.56 | |
| Grade 9 | 11.69 ± 4.98 | | 11.86 ± 4.94 | |
| Grade 10 | 11.22 ± 4.72 | | 12.01 ± 4.30 | |
| Family type | | | | |
| Nuclear | 11.35 ± 4.79 | 0.287 (.775) | 12.18 ± 4.97 | 1.901 (.074) |
| Joint | 11.48 ± 4.89 | | 11.35 ± 4.13 | |
| Father's education | | | | |
| Up to primary | 12.41 ± 5.11 | 5.717 (.004) | 12.18 ± 4.99 | 2.306 (.101) |
| Secondary level | 11.03 ± 4.45 | | 12.13 ± 4.59 | |
| Tertiary level | 10.56 ± 5.11 | | 11.00 ± 4.68 | |
| Mother's education | | | | |
| Up to primary | 12.45 ± 5.24 | 5.175 (.006) | 12.42 ± 4.85 | 2.874 (.058) |
| Secondary level | 10.91 ± 4.36 | | 11.84 ± 4.70 | |
| Tertiary level | 11.20 ± 5.44 | | 10.78 ± 4.69 | |
| Father's occupation | | | | |
| Job | 10.18 ± 4.38 | 2.302 (.076) | 10.93 ± 4.75 | 1.695 (.167) |
| Business | 11.74 ± 4.76 | | 12.16 ± 5.08 | |
| Farmer | 11.37 ± 4.86 | | 11.87 ± 4.34 | |
| Others | 12.10 ± 5.27 | | 12.47 ± 4.65 | |
| Mother's occupation | | | | |
| Homemaker | 11.46 ± 4.87 | 0.600 (.549) | 11.95 ± 4.73 | 1.022 (.307) |
| Non-homemaker | 11.00 ± 3.97 | | 11.24 ± 4.78 | |
| Life-style and behavioral variables | | | | |
| Ever smoked tobacco | | | | |
| No | 11.18 ± 4.54 | 2.446 (.001) | 11.69 ± 4.58 | 1.938 (.024) |
| Yes | 13.62 ± 6.53 | | 13.22 ± 5.58 | |
| Ever drank alcohol | | | | |
| No | 11.35 ± 4.77 | 0.848 (.397) | 11.81 ± 4.70 | 1.066 (.287) |
| Yes | 12.20 ± 5.23 | | 12.90 ± 5.17 | |
| Ever used illicit drugs | | | | |
| No | 11.36 ± 4.72 | 0.858 (.391) | 11.77 ± 4.65 | 1.545 (.058) |
| Yes | 12.30 ± 6.34 | | 13.72 ± 5.85 | |
| Socio-environmental variables | | | | |
| Parents rarely check homework past month | | | | |
| No | 11.23 ± 4.77 | 0.804 (.422) | 11.42 ± 4.55 | 1.998 (.046) |
| Yes | 11.57 ± 4.81 | | 12.27 ± 4.84 | |
| Poor communication with parents' past month | | | | |
| No | 12.20 ± 5.22 | 2.415 (.016) | 12.20 ± 4.93 | 1.081 (.280) |
| Yes | 11.08 ± 4.58 | | 11.70 ± 4.62 | |
| Lack of peer support past month | | | | |
| No | 10.91 ± 4.53 | -2.850 (.005) | 11.42 ± 4.65 | 2.711 (.007) |
| Yes | 12.13 ± 5.08 | | 12.62 ± 4.76 | |
| Parental tobacco or drug use | | | | |
| No | 11.33 ± 4.70 | -0.608 (.544) | 11.75 ± 4.62 | 0.902 (.368) |
| Yes | 11.65 ± 5.16 | | 12.22 ± 5.08 | |

(continued)

Table 2. (continued)

| Variables | Problematic TikTok use (<i>n</i> = 517) | | Problematic Facebook use (<i>n</i> = 483) | |
|---------------------------------|--|--|--|--|
| | Mean ± SD | <i>t</i> / <i>F</i> value (<i>p</i> -value) | Mean ± SD | <i>t</i> / <i>F</i> value (<i>p</i> -value) |
| Truancy past month | | | | |
| No | 11.01 ± 4.51 | −2.519 (.012) | 11.70 ± 4.73 | 0.919 (.359) |
| Yes | 12.12 ± 5.22 | | 12.10 ± 4.70 | |
| Bullied past month | | | | |
| No | 11.11 ± 4.72 | −1.811 (.071) | 11.86 ± 4.70 | 0.023 (.982) |
| Yes | 11.91 ± 4.88 | | 11.85 ± 4.77 | |
| Had no close friend | | | | |
| No | 10.95 ± 4.99 | −1.587 (.113) | 11.67 ± 4.76 | 0.772 (.440) |
| Yes | 11.64 ± 4.66 | | 12.00 ± 4.69 | |
| Had physical fight in past year | | | | |
| No | 11.06 ± 4.73 | 1.955 (.051) | 11.36 ± 4.60 | 2.871 (.004) |
| Yes | 11.89 ± 4.85 | | 12.61 ± 4.81 | |
| Had serious injury in past year | | | | |
| No | 10.32 ± 4.25 | 3.733 (<.001) | 11.36 ± 4.85 | 1.667 (.096) |
| Yes | 11.95 ± 4.96 | | 12.11 ± 4.64 | |
| Had loneliness in past year | | | | |
| No | 11.24 ± 4.62 | 1.694 (.091) | 11.75 ± 4.64 | 1.002 (.317) |
| Yes | 12.24 ± 5.59 | | 12.30 ± 5.03 | |

Note. Bold values indicate significant results.

($t = 1.938$, $p = .024$). Similarly, those whose parents rarely checked their homework in the past month had a significantly higher mean score compared to those whose parents checked their homework regularly ($t = 1.998$, $p = .046$). Adolescents who lacked peer support during the past month had significantly higher mean scores compared to those who had peer support ($t = 2.711$, $p = .007$). Additionally, those involved in physical fights during the past year had significantly higher mean scores than those who were not involved ($t = 2.871$, $p = .004$).

Multiple Linear Regression Analysis and Problematic TikTok Use

Table 3 presents the final predictive model for PTTU among adolescents. The adjusted R^2 was .082, which indicates that approximately 8.2% of the variance was explained by the independent variables used in the model. Results suggested that having ever smoked tobacco ($B = 2.21$, $p = .017$), poor communication with parents in past month ($B = -1.43$, $p = .005$), lack of peer support in past month ($B = 0.94$, $p = .048$), and having serious injury in past year ($B = 1.30$, $p = .007$) were significant factors associated with PTTU.

Multiple Linear Regression Analysis and Problematic Facebook Use

Table 3 presents the final predictive model for PFU among adolescents. The adjusted R^2 was .039, which

indicates that approximately 3.9% of the variance was explained by the independent variables used in the model. Results suggested that only participants' family type ($B = -1.102$, $p = .029$) was a significant factor associated with PFU.

Discussion

The present study investigated problematic Facebook use (PFU) and problematic TikTok use (PTTU), and their associations with demographic, lifestyle, and socio-environmental factors among school-going adolescents in Bangladesh. The findings for PTTU showed significant associations with those who had a history of tobacco smoking, poor communication with parents, lack of peer support, and having experienced serious injury in the past year. PFU was associated with nuclear family structure, parents rarely checking homework in the past month, lack of peer support in the past month, and being involved in physical fights in the past year. These results highlight the complex interplay of individual, familial, and social factors associated with adolescent PSMU.

From a social learning theory (SLT) perspective, the associations observed in the present study suggest how adolescents acquire and reinforce behaviors through observation, imitation, and social feedback within their digital and offline environments. Both Facebook and TikTok expose adolescents to peer norms, influencer behaviors, and algorithmically reinforced content.

Table 3. Predictive Models for Problematic TikTok and Facebook Use.

| Variables | B | S.E. | β | t | p |
|--|--------|-------|---------|--------|-------------|
| Problematic TikTok use | | | | | |
| $R^2 = .127$, adjusted $R^2 = .082$, $F = 2.826$, $p < .001$ | | | | | |
| (Constant) | 12.852 | 2.995 | | 4.291 | <.001 |
| Location ^a | -.460 | .473 | -.047 | -.973 | .331 |
| Gender ^b | .350 | .489 | .035 | .716 | .474 |
| Age ^c | .530 | .464 | .075 | 1.143 | .254 |
| Grade ^d | -.348 | .303 | -.074 | -1.148 | .252 |
| Family type ^e | .103 | .490 | .010 | .211 | .833 |
| Father education ^f | -.966 | .434 | -.135 | -2.224 | .027 |
| Mother education ^g | -.151 | .476 | -.019 | -.318 | .751 |
| Father occupation ^h | .266 | .288 | .047 | .926 | .355 |
| Mother occupation ⁱ | .330 | .860 | .018 | .383 | .702 |
| Ever smoking ^j | 2.211 | .926 | .124 | 2.388 | .017 |
| Ever alcohol use ^j | .465 | 1.190 | .020 | .391 | .696 |
| Ever illicit drug use ^j | -.055 | 1.306 | -.002 | -.042 | .967 |
| Parents rarely check homework (past month) ^j | .172 | .453 | .018 | .381 | .704 |
| Poor communication with parents' (past month) ^j | -1.439 | .507 | -.132 | -2.836 | .005 |
| Lack of peer support (past month) ^j | .944 | .476 | .095 | 1.982 | .048 |
| Parental tobacco or drug use ^j | -.336 | .591 | -.028 | -.568 | .570 |
| Truancy past month ^j | .924 | .514 | .090 | 1.796 | .073 |
| Bullied past month ^j | .387 | .498 | .038 | .777 | .438 |
| Had no close friend ^j | .779 | .483 | .077 | 1.611 | .108 |
| Had physical fight (past year) ^j | .026 | .486 | .003 | .053 | .958 |
| Had serious injury (past year) ^j | 1.304 | .485 | .127 | 2.689 | .007 |
| Had loneliness (past year) ^j | .700 | .634 | .052 | 1.104 | .270 |
| Problematic Facebook use | | | | | |
| $R^2 = 0.090$, adjusted $R^2 = .039$, $F = 1.776$, $p = .017$ | | | | | |
| (Constant) | 14.912 | 3.224 | | 4.625 | <.001 |
| Location ^a | .024 | .498 | .002 | .048 | .962 |
| Gender ^b | -.058 | .566 | -.005 | -.103 | .918 |
| Age ^c | .109 | .461 | .016 | .237 | .813 |
| Grade ^d | -.309 | .317 | -.066 | -.975 | .330 |
| Family type ^e | -1.102 | .504 | -.110 | -2.188 | .029 |
| Father education ^f | .131 | .463 | .020 | .282 | .778 |
| Mother education ^g | -.604 | .500 | -.083 | -1.208 | .228 |
| Father occupation ^h | .269 | .289 | .052 | .929 | .354 |
| Mother occupation ⁱ | -.227 | .823 | -.015 | -.276 | .783 |
| Ever smoking ^j | 1.517 | .862 | .096 | 1.759 | .079 |
| Ever alcohol use ^j | 1.273 | 1.328 | .050 | .959 | .338 |
| Ever illicit drug use ^j | 1.506 | 1.260 | .063 | 1.196 | .233 |
| Parents rarely check homework (past month) ^j | .736 | .469 | .077 | 1.569 | .118 |
| Poor communication with parents' (past month) ^j | -.490 | .503 | -.048 | -.974 | .331 |
| Lack of peer support (past month) ^j | .906 | .503 | .092 | 1.801 | .073 |
| Parental tobacco or drug use ^j | -.260 | .572 | -.023 | -.454 | .650 |
| Truancy past month ^j | .232 | .525 | .024 | .442 | .659 |
| Bullied past month ^j | -.535 | .523 | -.054 | -1.023 | .307 |
| Had no close friend ^j | .299 | .486 | .031 | .616 | .539 |
| Had physical fight (past year) ^j | .859 | .500 | .089 | 1.717 | .087 |
| Had serious injury (past year) ^j | .381 | .498 | .038 | .765 | .445 |
| Had loneliness (past year) ^j | .611 | .627 | .049 | .975 | .330 |

Note. B = unstandardized regression coefficient; β = standardized regression coefficient. Bold values indicate significant results.

^a 1 = Urban, 2 = Rural;

^b 1 = Boy, 2 = Girl;

^c 1 = 12 to 13 years, 2 = 14 to 15 years, 3 = 16 to 18 years;

^d 1 = Grade 7, 2 = Grade 8, 3 = Grade 9, 4 = Grade 10;

^e 1 = Nuclear, 2 = Joint;

^f 1 = Up to primary, 2 = Secondary level, 3 = Tertiary level;

^g 1 = Up to primary, 2 = Secondary level, 3 = Tertiary level;

^h 1 = Job, 2 = Business, 3 = Farmer, 4 = Others;

ⁱ 1 = Homemaker, 2 = Not Homemaker;

^j 0 = No, 1 = Yes.

However, platform-specific features can shape how these learning processes operate. TikTok's short-form, rapidly reinforcing content may intensify behavioral imitation and reward-seeking, whereas Facebook engagement may be more embedded in sustained social monitoring and interpersonal feedback. SLT helps explain why PFU and PTTU share common underlying risk factors, while differences in platform design contribute to distinct socio-environmental correlates.

The sample's overall mean score for PTTU on the Problematic TikTok Use Scale was relatively low (11.4 out of 30). Direct comparison across studies is challenging due to differences in assessment tools and scoring criteria. For instance, a study conducted among Chinese school students reported a mean score of 36.17 (out of 60) for TikTok Use Disorder using a 10-item scale adapted from the Smartphone Addiction Scale Short Version (Sha & Dong, 2021). In a study among Turkish high school students, a mean score of 25.96 (out of 80) was reported for PTTU, using a 16-item scale (Akyil & Oral, 2024).

The sample's overall mean score for PFU on the Bergen Facebook Addiction Scale (BFAS) was also relatively low (11.86 out of 30). This score is lower than that reported in a previous Bangladeshi study using the six-item BFAS, which reported a mean score of 16.00 among students from high schools, universities, and medical colleges (Al-Mamun et al., 2022). A study among Ethiopian university students reported a mean score of 43.1 (out of 88) using the 18-item BFAS (Khalil et al., 2020). Another study among Turkish adolescents compared PFU scores using the 18-item BFAS between ADHD and non-ADHD groups, and reported that adolescents with ADHD had significantly higher scores (40.4) compared to their non-ADHD counterparts (27.9) (Gul et al., 2018). It is likely that variations in PFU scores across studies are attributable to differences in cultural settings, study populations, and to instruments used along with scoring criteria.

The present study found that participants with a history of smoking showed higher levels of PTTU, supporting H_2 . This finding aligns with previous studies whereby a strong association between TikTok use and nicotine use among adolescents was reported. For instance, a study by Vassef et al. (2022) found that adolescents who used TikTok several times per day had 2.16 times higher odds of ever using e-cigarettes and 3.11 times higher odds of using e-cigarettes in the past 30 days compared to those who used TikTok less frequently or not at all. The authors suggested that exposure to promotional tobacco-related content on TikTok may have contributed to this association. Similarly, the present study found that participants with a history of smoking were at a significantly higher risk of PFU, further supporting H_2 .

This is consistent with a study among Bangladeshi university students, which reported that 47.7% of participants with a smoking history had PFU, compared to 34.8% of those without a smoking history (participants with a smoking history had a 1.2 times higher risk of PFU) (Sayeed, et al., 2020). Therefore, smoking behaviors may be a shared risk factor for problematic use of both TikTok and Facebook, possibly reflecting overlapping psychological or behavioral traits, such as impulsivity or sensation-seeking that predispose adolescents to both nicotine use and PSMU. From an SLT perspective, adolescents may imitate risk behaviors observed by peers and influencers, and platforms such as TikTok and Facebook can reinforce these behaviors through social feedback and algorithmic rewards, strengthening the association between tobacco smoking and PSMU.

PTTU was significantly associated with poor communication with parents during the past month, supporting H_3 . Adolescents with problematic TikTok use tendencies have been reported to experience worse parental relationships and negative parenting styles compared to non-users (Chao et al., 2023). Similarly, parental monitoring has been identified as a critical factor influencing adolescents' PSMU. For instance, a study among third, fourth, and fifth-grade children in the United States found that parental monitoring can reduce media time and significantly impact children's sleep, school performance, and prosocial and aggressive behaviors (Gentile et al., 2014). Moreover, lower levels of family expressiveness and higher levels of family conflict have been associated with PSMU (Albeladi & Palmer, 2020). Another study found that children with more conflicts with their mothers, lower autonomy, and those undergoing frequent punishment were more likely to exhibit PSMU (Wartberg et al., 2023). These findings collectively highlight the importance of positive parent-child relationships and effective parenting strategies in mitigating the risk of PSMU among adolescents. From an SLT perspective, poor parent-child communication may limit guidance, modeling, and reinforcement of healthy behaviors, increasing adolescents' reliance on peers and digital platforms for behavioral learning and elevating the risk of problematic TikTok use.

In the context of Facebook use, participants whose parents rarely checked their homework were more likely to be problematic Facebook users, partially supporting H_3 . This aligns with previous studies that have emphasized the role of parental monitoring in shaping adolescents' social media behaviors. A recent meta-analysis concluded that positive parent-child interactions and general parenting practices, such as affection and responsiveness, can help prevent adolescents' PSMU (Vossen et al., 2024). Additionally, longitudinal studies have suggested that parents play a significant role in preventing

PSMU by implementing monitoring and mediation strategies (Demers et al., 2024). For example, technical and monitoring parenting mediation strategies have been found to be significantly associated with reduced social media use among adolescents (Albeladi & Palmer, 2020). Therefore, parental involvement and supportive family environments emerge as important factors fostering healthier social media habits among adolescents. From an SLT perspective, parental monitoring and involvement provide external regulation and reinforcement of healthy behaviors, whereas limited supervision may increase adolescents' susceptibility to PSMU.

The findings of the present study suggest that adolescents who lacked peer support during the past month were at a significantly higher risk of PTTU compared to those who had peer support, supporting H₄. Lack of peer support can induce feelings of loneliness (Kotwal et al., 2021), ultimately leading to problematic online behaviors (Zhao & Kou, 2024). Moreover, PSMU has been positively associated with loneliness and social connectedness, supporting the notion that adolescents may turn to platforms such as TikTok to compensate for unmet social needs (Naher et al., 2022). Similarly, the present study found that adolescents who lacked peer support during the past month were also at a significantly higher risk of PFU, again supporting H₄. This finding is consistent with studies conducted among Italian adolescents, which demonstrated that peer alienation is significantly related to PFU adolescents (Badenes-Ribera et al., 2019). Another study among Portuguese Caucasian adolescents also found a positive association between peer alienation and PFU (Assunção et al., 2017). Unsurprisingly, the critical role of peer relationships in shaping adolescents' social media behaviors and the potential for loneliness to exacerbate potentially addictive tendencies has been reported across multiple cultural settings (Adelhardt, 2024; Assunção et al., 2017). From an SLT perspective, adolescents' behaviors are shaped through imitation and social reinforcement. Limited peer support may weaken positive social cues, increasing the likelihood of PTTU and PFU.

Adolescents who experienced a serious injury in the past year were at a significantly higher risk of PTTU, supporting H₆. It is possible that serious injuries which often reduce physical activity (Ekegren et al., 2018), may predispose individuals to a variety of passive behaviors such as TikTok use or short video addiction (Jianfeng et al., 2024). Reduced physical activity may also reflect increased screen time due to adolescents seeking alternative forms of engagement and entertainment during recovery from serious injury. Additionally, the present study found that adolescents involved in physical fights in the previous year were at a significantly higher risk of PFU compared to those that did not, further supporting

H₆. Adolescents with dysfunctional online behaviors, such as frequent use of Facebook and engagement with online gambling-related content, are more likely to exhibit aggressive behaviors (Tsitsika et al., 2014). Moreover, a significant association has been reported between social media use and engagement in risky behaviors (e.g., engaging in aggressive behavior) among adolescents (Vannucci et al., 2020). Another study highlighted that social media content, including comments, videos, and depictions of romantic conflicts, can intensify social media threats and increase the likelihood of offline violence among adolescents (Elsaesser et al., 2021). From an SLT perspective, increased reliance on social media during periods of physical inactivity may reinforce exposure to maladaptive or aggressive content, thereby increasing the risk of PSMU and aggressive behaviors.

Not all proposed hypotheses were fully supported. Contrary to H₁, gender and place of residence were not consistently associated with PFU or PTTU in the multi-variable models, suggesting that demographic differences may play a less decisive role once behavioral and socio-environmental factors are taken into account. Similarly, H₅ was only partially supported. Although school-related factors such as truancy were associated with PTTU at the bivariate level, bullying victimization was not independently associated with either PFU or PTTU after adjustment for other variables. These findings suggest that the influence of school-based stressors on PSMU may be indirect or mediated through peer relationships, emotional vulnerability, or concurrent risk behaviors rather than exerting a direct effect. From an SLT perspective, this pattern suggests that adolescents' PSMU may be shaped more strongly by immediate social reinforcement and coping contexts than by structural or demographic characteristics alone.

To the best of the authors' knowledge, the present study is the first to simultaneously examine PTTU and PFU among school-going adolescents in Bangladesh. A key strength of the study lies in examining integrated demographic, lifestyle-behavioral, school-related, and family-related factors within a single framework. Additional strengths include the inclusion of both rural and urban schools, and the platform-specific assessments of two widely used social media applications among Bangladeshi adolescents, which together enhance the robustness and contextual relevance of the findings for low- and middle-income country settings.

However, the study is not without limitations. First, the sampling strategy was not regionally representative because the data were collected from a single district. Expanding the sample to include a more diverse and representative group of adolescents from various regions of Bangladesh would enhance the generalizability of the findings. Secondly, the reliance on self-reported data

may introduce biases, such as recall or social desirability bias. Incorporating objective measures of social media use, such as app use data from smartphones, alongside self-reported information would improve the accuracy and reliability of the findings. Finally, the cross-sectional design of the study limits the ability to establish causal relationships. Adopting longitudinal study designs would provide more rigorous evidence for examining the temporal relationships between social media use and associated factors along with more accurate delineation of the trajectories of use leading to addictive behaviors.

Despite these limitations, the findings have important practical and policy implications. By identifying key individual, familial, peer, and school-related factors associated with PFU and PTTU, the study provides evidence to inform targeted, developmentally appropriate interventions. These findings are relevant for policymakers, educators, and parents seeking to promote healthier social media engagement among adolescents. Future studies should build on these findings by using longitudinally and nationally representative designs to examine the long-term mental, social, and behavioral consequences of PSMU in adolescence.

Conclusion

The present study assessed PTTU and PFU and identified key factors associated with these behaviors among high school students in Bangladesh. The findings showed that adolescents with a history of smoking, problematic relationships with their parents, lack of peer support, and those who had experienced a serious injury in the past year were at a significantly higher risk of PTTU. Adolescents from nuclear families, those whose parents rarely checked their homework, those lacking peer support, and those involved in physical fights in the past year were at a significantly higher risk of PFU. The findings underscore the need for effective measures and interventions to mitigate the risks associated with PSMU. Several preventive strategies may be considered, including: (i) awareness campaigns for parents and teachers regarding safe internet browsing and the potential risks of excessive social media use, (ii) increased awareness as to the need for supportive and empathetic environments at home and school aimed at improving the understanding of adolescents' needs and priorities, and (iii) encouraging adolescents to engage in alternative activities, such as cultural events, sports, and other extracurricular activities, to reduce their reliance on social media.

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ORCID iDs

Md. Abu Huraira  <https://orcid.org/0009-0000-7678-177X>

Mohammed A. Mamun  <https://orcid.org/0000-0002-1728-8966>

Firoj Al Mamun  <https://orcid.org/0000-0003-4611-9624>

Ethical Considerations

All procedures in the present study adhered to the ethical standards guideline outlined in the Helsinki Declaration of 1975, as revised in 2013. Ethical approval for the present study was obtained from the Institutional Review Board of CHINTA Research Bangladesh [Ref: chinta/2024/08(1)]. Participants were informed that their involvement was voluntary, and they could withdraw from the study at any time. Additionally, no compensation was provided for participation. Prior to data collection, approval was obtained from school authorities, including school principals and class teachers.

Consent to Participate

Students received a written informed consent form, which required review and approval by their parents or guardians before participating in the survey that was conducted by the research team. To ensure clarity, any questions or concerns regarding the survey were addressed by class teachers and research team members present during the survey. A pilot study was carried out with 30 students to assess the clarity and readability of the survey, but these responses were excluded from the final analysis.

Author Contributions

With subsequent contributions from other authors, FAM and MAM planned and conceptualized the study and were responsible for the data collection and management processes. MB and MAH analyzed the data and interpreted the results with direct supervision from FAM. The first draft was written by MB, MAH, and FAM. The draft manuscript was reviewed and edited by MMK, MMA, DG, MDG, MAM, and FAM. All authors reviewed and approved the final manuscript.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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