Problematic Use of Social Networking Sites Among Adolescents in the Czech Republic Versus Offline Risk Behaviour and Parental Control

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Abstract. The Problematic Use (PU) of Social Networking Sites (SNS) is a diagnostic and preventive as well as educational challenge. Problematic Use of new media is currently a phenomenon discussed by psychologists, sociologists, and media educators in the field of diagnosing the scale of the phenomenon, as well as protective factors and risks related to this phenomenon. This text is part of the debate on the scale of SNS among young people, as well as on the role of parents in reducing this phenomenon. The text also juxtaposes issues related to the prediction of PU SNS and risk behaviours in the offline space. The study employed a triangulation of quantitative tools in the form of: frequency of SNS use, parental control online, and scale of psychoactive substance use. Based on the data collected among a group of adolescents in the Czech Republic (N = 531 individuals aged 13–19 years, study year 2018/2019), it was noted that: 1) Almost 75% of adolescents systematically use SNS before bedtime; 2) Every fifth adolescent consumes dinner daily or almost daily accompanied by SNS; 3) Less than a third of respondents use SNS almost continuously; 4) SNS UI indicators are mutually related; however, the relationship is not always strong; 5) Girls have a slightly higher level of PU SNS than boys; 6) Systematic alcohol consumption is a predictor of PU SNS; 7) Parental restriction of Internet use time leads to a reduction in PU SNS among adolescents.

Keywords: Problematic internet use · Social networks · Adolescents · Czech Republic · Offline risk behavior · Parental control · Parents

1 Introduction

The current stage of development of the information society is characterized by an increasing intensity in the use of digital services [1, 2] and a simultaneous increase in

awareness related to the positive and negative impact of new media on individuals and social groups [3]. Paradoxically, the development of new technologies, which by definition was supposed to contribute to the improvement of the quality of life of people using information and communication technology (ICT), has revealed itself to be something of a trap at the same time. It transpires that selected digital services have the potential to negatively affect selected social groups. One example of such a condition is Problematic Use of the Internet (PUI). PUI consists of intensive, unsupervised use of digital services, in particular Social Networking Sites (SNS), instant messaging, online shops, online games, gambling sites, and pornography sites; as well as proving a behavioural challenge, it has also become something of a diagnostic and preventive challenge as well [3]. PUI is an umbrella term that covers various forms of uncontrolled SNS use. The groups at particular risk for out-of-control use of SNS and online games are primarily adolescents [4, 5]. Considering that adolescents are a group at particular risk there is a need to undertake in-depth research on the scale of the phenomenon in this group with a particular focus on countries where research on PUI is rarely conducted on large research samples [6, 7]. The present text fills the gap in relation to one type of PUI, that of the style of SNS use among Czech adolescents. The text is also an attempt to discuss the concept of excessive SNS use and to link this concept to the broader framework of Problematic Internet Use, which is sometimes erroneously identified with Internet addiction.

2   Theoretical Framework

Problematic Internet Use is a theoretical concept that emerged as an attempt to describe the colloquial term Internet addiction. Due to the unclear diagnostic criteria associated with digital addiction, the concept is controversial among both experts in media psychology and pedagogy and young people who use new technologies intensively [8–10].

The concept of PUI is a safer term, not only because it does not evoke stereotypes, but above all because it offers space for a discussion on diagnostic criteria and effective ways of counteracting the excessive and uncontrolled spending of time on the Internet. The issue of combatting PUI is also an element in strengthening digital security, i.e. raising awareness and shaping habits related to controlled use of new media while maintaining a high level of reflection relating to how ICTs transform users' habits [11]. Studies devoted to PUI, or ICT use more broadly, contain many elements. On the one hand, one can find studies devoted to the constructive use of ICTs, where new media satisfy different needs of individuals [12, 13], while on the other hand, there are indications that ICTs make that relationship shallower, triggering conflicts that result from the time spent using ICTs in the immediate family environment [14]. In general, since ICTs are characterized by a high level of duality, the analysis of selected PUI factors requires particular care not to create additional stereotypes about the functioning of selected age groups in cyberspace.

Problematic use in this text will be understood as a situation related to the misuse of online services that lead to conflicts with the environment and have a negative impact on the quality of life of individuals, and that occur in inappropriate situations. Among the types of PUI there can be distinguished the Problematic Use of social networks (PU

SNS). Due to the popularity and ubiquity of SNS, as well as the place that SNS occupy in the lives of young people, it seems reasonable to distinguish this type of PUI. Among the diagnostic criteria of problematic SNS use is, first of all: the place of SNS use, the time of SNS use, the type of activities undertaken in SNS, the type of needs that SNS satisfy, and the type of negative consequences that they cause in the individual and from a macro-social perspective. Due to the multiplicity of indicators, this study uses a simple SNS PU scale [15], which takes into account only the key parts of daily life currently affected by active SNS use.

In this text, PU SNS will be defined as the use of different types of Social Networking Sites in an uncontrolled manner. SNS generate many individual and social problems. Individual problems include: loss of control of one's own behaviour, reduced mobility, reduced physical fitness, reduced activity in cyberspace, reduction of one's own life to virtual communication spaces, building one's own identity on the basis of SNS, and deteriorating school grades. Social problems include conflicts in the immediate environment due to the intensive use of SNS, and a lack of social interaction (especially peer interaction) outside SNS (Fig. 1).
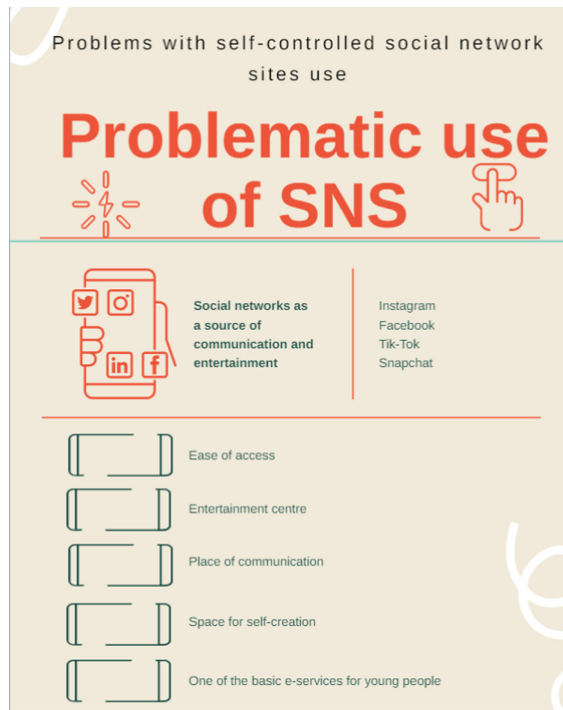

Fig. 1. Characteristics of problematic SNS use

Diagram number 1 presents the typical features associated with SNS. The popularity of SNS is due to several features of the development of the information society. First,

access to this type of service is now provided by easily accessible devices (e.g., smartphones) with unlimited Internet access. SNS are characterized by an attractive visual interface, enabling quick and seamless sharing of information and networking with other users. SNS provide access not only to attractive pieces of information created by other users and commercial entities, but are also an entertainment center. SNSs are a space for the ready creation of one's own image, through posting photos, descriptions, comments, and the interactions that occur with other users [16]. SNSs have become fundamental among the e-services used by adolescents that do not require advanced digital competence. SNS developers stimulate user activity through a system of notifications about other users' activities and information profiling. It is also increasingly noticeable that SNS use algorithms to target selected age groups and the type of content viewed and posted by users. Due to all the mentioned features of SNSs, it is these types of sites (Tik-Tok, Instagram, Facebook) that have become the most popular sites in cyberspace.

In this text, the authors seek to highlight not only the scale of the PU SNS phenomenon, but also to show to what extent PU SNS is related to parental influence and the risk behaviour of adolescents. This research is unique because to date no such analyses have been conducted with respect to Czech adolescents in the narrow field of PU SNS. The research is an extension of analyses conducted in the same area, but in other countries [17–20].

3   Methodology

3.1   Aim of the Research and Research Problems

The aim of the research is to show the scale of Problematic Use of social networks and the issues that differentiate this phenomenon according to sociodemographic variables. The indirect aim is to determine the level of influence of risk factors (risky behavior in the offline space) and protective factors (restrictive upbringing methods in the home environment) on PU SNS. The subject of the research are the declarations of adolescents from the Czech Republic. The following research problems are assumed:

RQ1: What is the level of Problematic Use of Social Networking Sites among adolescents in the Czech Republic?
RQ2: To what extent are indicators of the level of Problematic Use of Social Networking Sites mutually related?
RQ3: To what extent is the level of Problematic Use of Social Networking Sites differentiated by sociodemographic variables?
RQ4: What is the relationship between problematic social network use and online risk behaviors with the application of a restrictive new media parenting style in the family environment?

3.2 Research Tools

The study used a triangulation of quantitative research tools. The research tools were translated into Czech and then transferred into digital form. The battery of tests consisted of the following research tools:

1. SNS use frequency scale [15], consisting of 5 items measuring SNS use style at mealtimes and just before bedtime and after waking up. Responses were constructed on a 5-point Likert scale ranging from 1 - never (low SNS use) to 5 - daily (high SNS use).
2. Parental control of online activity [21, 22] constructed from 7 items, using a Likert scale from 1 - never (no parental control of digital safety) - to 5 - very often (high level of parental control of digital safety).
3. Scale of psychoactive substance use [23] constructed from 5 items, Likert scale from 1 - never (no experience of psychoactive substance use) - to 5 - very often (many systematic experiences of psychoactive substance use).

The instrument also included basic sociodemographic questions such as age, gender, place of residence, and type of school attended. The questionnaire also included a field related to the family's subjective sense of wealth, which was inspired by similar research on digital risk behavior [24].

The tool was translated by experts with many years of experience in conducting research on risk behaviour in online and offline spaces. The battery of tests was adapted to the age of the adolescents. The adaptation of the tool took place through pilot studies as well as through feedback offered by two experts involved in the research project. These tools included in the test battery are widely used to measure risk behaviour in selected Central and Eastern European (CEE) countries. However, this study did not aim to standardise tools on representative samples.

3.3 Research Procedure

The research was conducted using an online survey. The original versions of the tool were translated from English into Polish and Czech. The translations were completed by a Polish and Czech team of researchers specializing in media pedagogy. The research was planned in cooperation with scientists from Palacky University in Olomouc and Pedagogical University in Cracow. The research was conducted among Czech adolescents during the school year 2018–2019 by volunteers cooperating with the Centre for the prevention of risky virtual communication Faculty of Education of Palacký University in Olomouc (PRVOK).

3.4 Selection and Characteristics of the Research Sample

The research was carried out across the whole Czech Republic. The data were collected by persons cooperating with PRVOK. The research was conducted in the school year 2018/2019. The respondents filled in electronic forms in the school institutions, with 531 respondents being surveyed. Of the respondents, 58.6% were girls and the remaining 41.4% were boys. The respondents were adolescents aged 13–19 years (mean = 16.61, median = 17, standard deviation = 1.76). The research was conducted among adolescents living in: villages (46.9%), towns up to 50 thousand citizens (37.7%), cities from 50 to 100 thousand (7.7%), cities over 200 thousand (5.8%), cities from 100 to 200 thousand (1.9%). The respondents described the subjective status of family wealth as: medium (76.8%), wealthy (13.0%), low status (10.2%). The study included students who were educated in: secondary school that offers the maturity exam (N = 426, 80.22%), primary school (N = 99, 18.64%), secondary vocational school without the maturity exam (N = 6, 1.12%).

3.5 Research Ethics

The research was conducted following the usual ethical principles for social sciences. The questionnaire study was approved by PRVOK staff. The questionnaire was screened for offensive questions and data collection was sensitive to the respondents. The tool was devoid of items to identify respondents. Participation in the study was completely voluntary. The respondents could opt out of completing the questionnaire at any time. Participation in the research required a multi-step consent: school management first, and then the respondent. The research tool was preceded by a letter of introduction showing the purpose of the research, as well as the how the collected data would be processed.

4 Results

4.1 RQ1: Level of Problematic Use of Social Networking Sites among Adolescents in the Czech Republic

Based on the data collected, it can be observed that Problematic Use of Social Networking Sites most often takes the form of SNS use as the last activity before bedtime. In this case, half of the respondents declare that SNS use is one of the last activities undertaken before bedtime. On the other hand, just after waking up, almost a third of the respondents also check new SNS resources with very high frequency. Almost every fifth teenager regularly checks SNS resources while eating dinner, while during other meals 11.3% do so during breakfast, and 13.2% do so very frequently during lunch. A detailed summary of the responses related to the frequency of SNS use during meals, just after waking up, and before going to bed is summarized in Fig. 2 below.
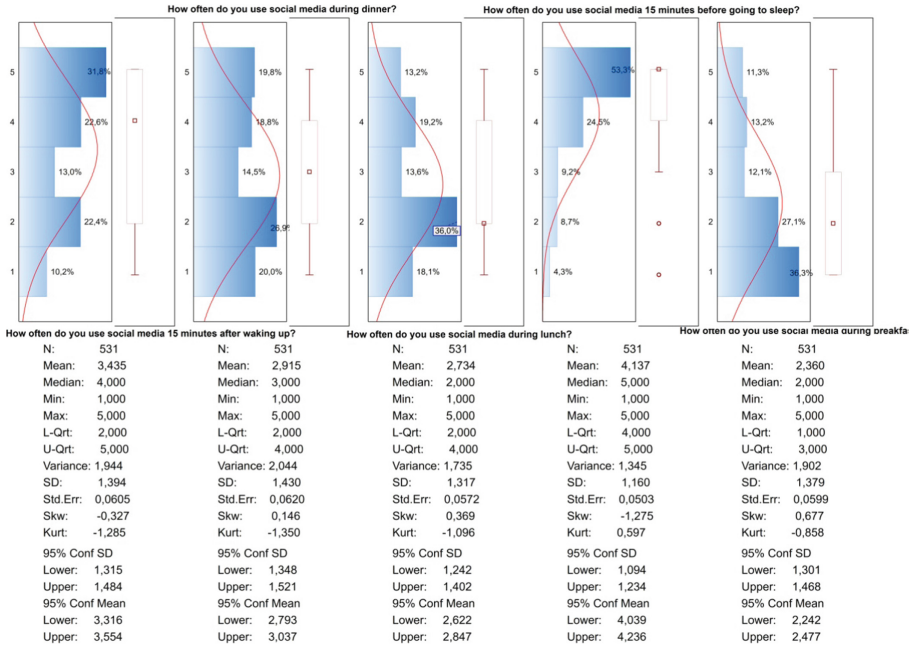
Fig. 2. Descriptive statistics - distribution of responses for the variable *Problematic Use of Social Networking Sites*

Using the k-means cluster analysis technique, four major groups can be distinguished according to the intensity of social media use. Cluster number 4 (pink) are those who use social media in all situations. Cluster 4 (N = 28.06%) includes almost a third of the respondents. These are the young people who actively use new media regardless of circumstances. The converse situation is seen in Cluster 2 (N = 135, 25.42%), where one in four of the surveyed teens use SNS at a very low intensity. Cluster 2 confirms the stereotype that not all individuals from the younger generation are immersed in social media activities without interruption. In contrast, Cluster 1 (N = 100, 18.83%) and Cluster 3 (N = 147, 27.68%) show that the adolescent group is strongly heterogeneous in terms of situations related to frequent SNS use. Nevertheless, it should be emphasized that what almost 75% of the adolescents have in common is their very frequent or frequent SNS use just before bedtime. The detailed distribution of the cluster analysis is presented in Fig. 3.
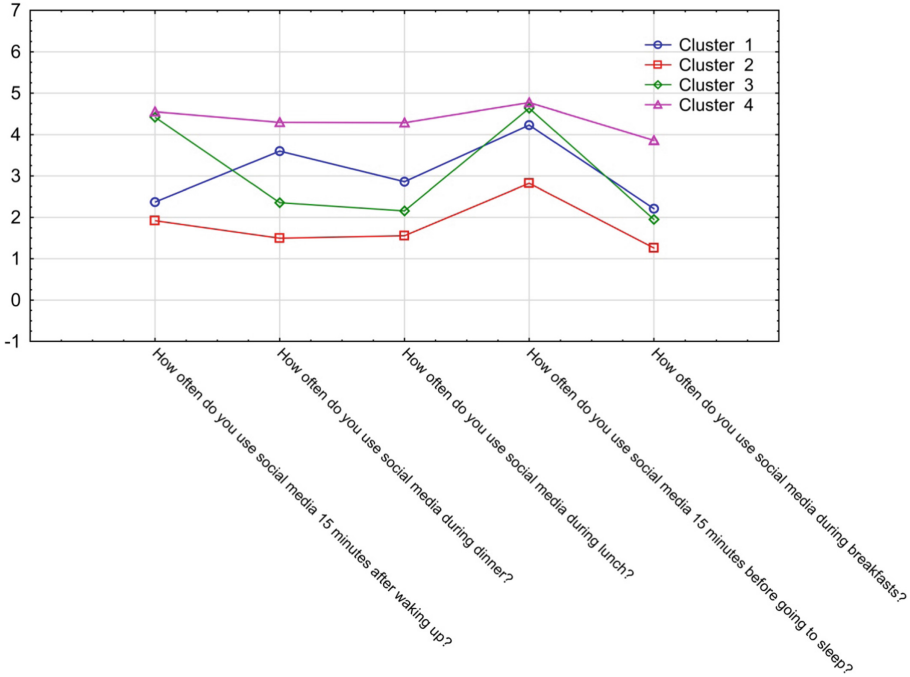
Fig. 3. Cluster analysis by k-means: adolescent groups by frequency of SNS use

Obviously, the five indicators indicated do not cover the full range of problematic situations related to SNS. It is important to include in further studies more variables related to the actual time use of SNS. The issue of limitations resulting from the applied research tool is discussed in Subsect. 4.1.

4.2   RQ2: Co-occurrence of Indicators of Problematic Social Network Use

To analyse the co-occurrence of indicators of Problematic Use of social networks the rho-Spearman correlation coefficient was used. All 5 indicators are positively correlated with each other. The co-occurrence is characterized by medium or strong strength. This means that adolescents who have adopted the habit of using social networks very often repeat the same behavior in different situations. For example, respondents who declare that they happen to browse SNS resources during breakfast also very often repeat this behavior during dinner or lunch. The results of the correlation coefficient are an important indication for the process of prevention of risky behaviors associated with new media. Table 1 below presents the results of the correlation test between the indicators.

Table 1. Correlation coefficient for indicators of problematic social network use

	1	2	3	4
1 How often do you use social media 15 min after waking up?	-			
2 how often do you use social media during dinner?	.4038***	-		
3 how often do you use social media during lunch?	.4318***	.6634***	-	
4 how often do you use social media 15 min before going to sleep?	.5509***	.4531***	.4327***	-
5 how often do you use social media during breakfasts?	.4335***	.4556***	.6467***	.3264***

4.3 RQ3: Level of Problematic Social Network Use Versus Sociodemographic Variables

The differentiation of behaviors related to problematic SNS use was also analyzed for changes according to sociodemographic characteristics. Based on the one-way analysis of variance, it was noted that slightly higher saturation of this type of problematic behaviour occurred among girls than among boys. Such a regularity is noticeable for all five indicators. A detailed visualization of gender differences is presented in Fig. 4.
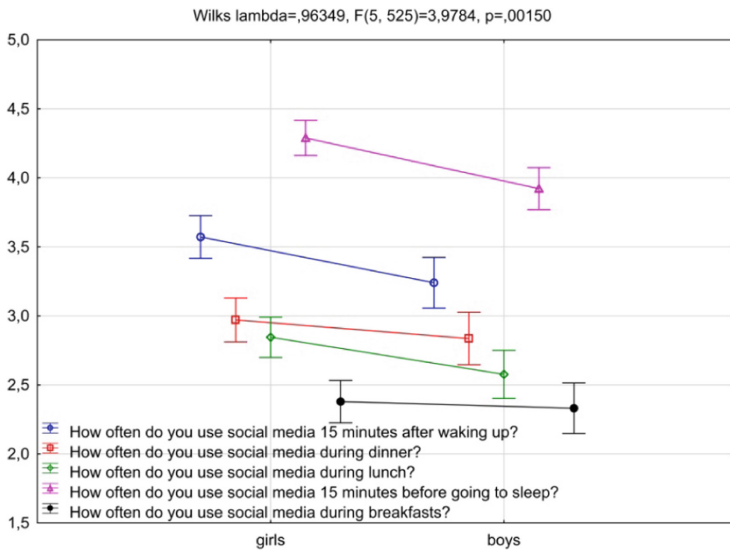

Fig. 4. Problematic use of SNS and gender

It was also observed that the subjective wealth status of the family is not related to the level of the discussed e-risk, with Wilks lambda $= .98983$, $F(10, 1048) = .53704$, p $= .86461$. However, it was observed that a slightly higher level of saturation of selected problematic behaviors related to social media is found among students from secondary vocational schools that do not offer a high school diploma (in particular, browsing social media resources during breakfast). A detailed depiction of co-occurrence is presented in the Fig. 5 below.
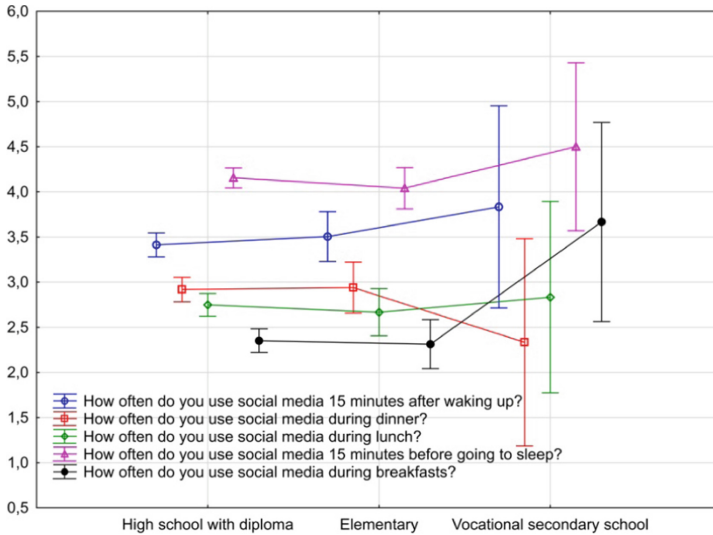

Fig. 5. Problematic use of SNS and school type

Metric age does not correlate with any of the indicators and thus was not deemed statistically significant.

4.4   RQ4: Predicting the Level of Problematic Social Network Use Versus Offline Risk Behaviors and Parental Control

In the present research, it was assumed that it is possible to predict problematic SNS use by considering the scale of risky behaviors in the offline space, as well as the forms of education for safe use of new media in the family environment. Separate calculations were performed for each form of problematic behavior use using multivariate regression analysis. Firstly, the collected data clearly show that combining risky behaviors from the online and offline sphere do not always correlate. In the present predictive models, three such cases were noted in reference to alcohol consumption, which determines the increase of selected forms of problematic SNS use. Moreover, in this age group, the most effective way to reduce the level of problematic SNS use is parental control over the time spent online. Since there is a different intensity of PU SNS for each of the behaviours identified in the tool, it was decided to carry out a predictive analysis separately for each factor. However, it should be clearly emphasized, referring to Table 2, that these are not indicators that have a strong impact on all adolescents.

Table 2. Predictors of problematic SNS use versus offline risk behavior and online parental control

	How often do you use social media 15 min after waking up?		How often do you use social media during dinner?		How often do you use social media during lunch?		How often do you use social media 15 min before going to sleep?		How often do you use social media during breakfasts?	
	β	SE	β	SE	β	SE	β	SE	β	SE
Cigarette smoking	0,03	0,06	0,02	0,06	0,03	0,06	0,11	0,06	0,06	0,06
Alcohol consumption	0,13	0,07	−0,08	0,07	**0,13***	**0,07**	−0,05	0,07	**0,17***	**0,06**
Getting drunk	0,03	0,07	**0,18***	**0,07**	0,00	0,07	0,12	0,07	0,00	0,07
Smoking marijuana	−0,02	0,06	0,02	0,06	0,08	0,06	−0,01	0,06	0,07	0,06
Drug use	0,05	0,05	0,07	0,05	0,08	0,05	−0,01	0,05	0,07	0,05
Parents check if I use the Internet safely	−0,01	0,07	−0,08	0,07	−0,12	0,07	−0,03	0,07	−0,03	0,07
Parents check what I do on the Internet	0,03	0,07	0,07	0,07	0,11	0,07	0,06	0,07	0,06	0,07
Parents control the time I spend on the Internet	−0,05	0,05	**−0,16***	**0,05**	−0,06	0,05	−0,05	0,05	**−0,11***	**0,05**
My parents control the software I download	0,04	0,05	0,03	0,05	−0,01	0,05	−0,07	0,05	0,01	0,05
Parents control the games I play	−0,04	0,06	0,02	0,06	−0,07	0,06	**−0,13***	**0,06**	0,05	0,06
My parents control the websites I visit	−0,07	0,07	0,01	0,07	0,02	0,07	0,03	0,07	−0,04	0,07
I have parental control software installed for my Internet activities	0,05	0,06	−0,02	0,06	0,03	0,06	0,00	0,06	0,02	0,06
	R =,212 R2 = ,045 F(12,518) = 2.04 p < .0190 Std. Error of estimate: 1.3782		R =,252 R2 =,063 F(12,518) = 2.94 p < .0005 Std. Error of estimate: 1.3991		R =,270 R2 = ,073 F(12,518) = 3.40 p < .0000 Std. Error of estimate: 1.2828		R =,247 R2 = ,061 F(12,518) = 2.80 p < .0009 Std. Error of estimate: 1.1368		R =,310 R2 = ,096 F(12,518) = 4.61 p < .0000 Std. Error of estimate: 1.3261	

* < 0,05, ** < 0,001, *** < 0,0001.

5   Discussion

Adolescents most often use social media just before going to bed and just after waking up. Based on the data collected, it was noted that three-quarters of the respondents engage in such activity in the evening very often or every day. This behavior is dictated by the desire to access information in digital form, thus satisfying a basic need in the information society. SNS sites also allow adolescents to keep up to date with information shared by peers and peer groups, and to communicate with those close to them. Thus, the issue of frequency of SNS use, on the one hand, is a factor with which to identify problematic Internet use, while on the other hand, it is a factor that has a close relationship with the social needs of adolescents [25–27]. As part of the answer to the first research problem, it was also noted that young people very often use SNS during selected meals. This is also one of the factors that can be considered as inappropriate use of new media [28, 29]. Such behaviour is increasingly becoming the norm, which is sometimes more often criticised by older people, e.g. parents, while among some young people it does not raise serious objections linked to savoir-vivre, or is treated as something that needs to be corrected [30, 31]. Analyzing the scale of the phenomenon, it was also noted that not all young people use SNS extensively in all of the situations mentioned in the study. Based on the data collected, only about a third of the respondents are up-to-date (all the time) with social network resources. This result is more or less consistent with studies conducted in other countries among adolescents [32]. This means that not all young people are characterized by high levels of problematic Internet use. The results send a clear message that treating all young people as internet and smartphone addicts is an abuse caused by the stereotypes circulating in public opinion [33].

The collected results of the research confirm the previous results on different forms of problematic Internet use. Regardless of the adopted diagnostic factors (and the tools used to measure them) and measurement scales, there is a high probability that the indicators measuring the analyzed phenomenon mutually co-occur [34, 35]. Of course, co-occurrence is not always characterized by high strength of correlation for all diagnostic indicators. The diagnosis of the PUI scale may therefore take a different form depending on the adopted reasons for new media use, time, type of devices used, and many other elements related to the style of digital media use.

The findings among Czech adolescents do not differ significantly from analyses from other countries. Girls are slightly more likely to have higher levels of problematic SNS use than boys. However, this relationship is variable in the context of problematic Internet use depending on the diagnostic criteria adopted, as well as the type of behaviour commonly classified as 'Internet addiction'. In this respect, particular caution should be exercised in terms of attributing the behaviours in question to gender. Moreover, when analyzing the elevated level of problematic SNS use, it is necessary to link the given indicators to the specific needs they satisfy [36–39].

Adolescence is a marked by a tendency to test external limits, such as those set by teachers and parents. Many of these behaviours are treated as typical for this developmental period. Others, on the other hand, are treated as deviations from social norms and are sometimes a source of intergenerational conflict. Maturation involves redefining the boundaries set by adults [40, 41]. Earlier parenting strategies (e.g., those used in late childhood) related to setting boundaries regarding the use of new media, e.g.,

controlling the websites visited or using software that limits the time of new media and access to selected websites, do not meet the assumed goals for adolescents' functioning in cyberspace. The results of regression models for all indicators of problematic SNS use clearly indicate that only for a selected group of adolescents is parental control of time spent on the Internet a factor reducing the intensity of SNS use. Therefore, in order to conduct prevention of behaviors related to problematic Internet use, it is necessary to move away from the assumption that only restrictive methods of education to new media are able to increase the level of digital safety of adolescents and protect this group from the harmful effects of new media [42–44]. Increasingly, it is not so much parental control as universal skill development that is becoming key to achieving a reduction. The prevalence of high levels of PUI is seen primarily among young people who have problems with self-control or who have unclear boundaries for SNS use in the home environment [45–47]. Prevention of risk behaviors in cyberspace should therefore capture a set of individual and social determinants.

6   Research Limitations

The data collected are characterized by several limitations. Firstly, the sample was selected in a near random manner. It is not a study based on full and stratified sampling considering the size of the different regions in the Czech Republic. This means that the data are not characterized by a structure that allows generalization of SNS problematic use behavior among all adolescents in the Czech Republic. Moreover, the data were collected in the pre-pandemic period, so the style of SNS use in this period is likely to differ significantly from the pandemic period, where a definite increase in the frequency of use of various e-services, including SNS, has been observed [48, 49].

Research on styles of SNS use is evolving. There is now increasing attention to issues related to the prevention of problematic Internet use, which includes problematic SNS use. When analyzing this type of behavior among adolescents, it is necessary to look more precisely at the different types of time spent using this type of media (screen time, awake time, thinking about SNS), as well as the real impact of SNS abuse on the quality of life in the offline space. Moreover, screen time should be much more precisely measured using improved indicators than the classic Likert scale. Real time measured through embedded applications (e.g. parental controls in Android systems) may become an effective solution in this case. Another interesting issue related to the Problematic Use of SNS is the connection between activities in SNS and the real needs of adolescents. Narrowing the research only to inappropriate locations and times of day may lead to partially accurate conclusions characterized by the error of reductionism.

It should be clearly noted that the research tools used are based on questionnaires that have not been validated in the Czech Republic on a representative sample of adolescents. Therefore, it is important to be aware that the present research is characterised by limitations resulting from the lack of a full adaptation of the tool to cultural and linguistic conditions. Such an action will be taken in the next stages of research on problematic Internet use.

7   Conclusions

The present research is an attempt to look at adolescents' style of new media use. The research allows us to look at problematic SNS use from the perspective of times of day, places, and frequency of use, as well as the influence of parental control and selected forms of risk behaviors in the offline space. The research was conducted in the pre-pandemic time, so it is interesting from a historical perspective, but still reveals some noteworthy trends. First, SNSs have become a natural tool for adolescents to interact with each other [50, 51] much like analogue phones used to be, and which were likewise heavily used by adolescents at times and for periods that were unacceptable to their parents and often caused concern or conflict. The difference between the state of the analogue period and the current stage of development of the information society [52] is mainly related to the ease of access to the smartphone, multimedia, hassle-free use, and the effect of rewards for using new media (including SNS) [53]. Research on usage styles on the ways in which SNS, or more broadly digital services, are used among adolescents is an interesting area of research on the culture and ways in which young people function in cyberspace [54]. In turn, questions about the scale of the phenomenon and the protective and risk factors associated with problematic SNS use are issues that relate directly to dynamically changing diagnostic criteria and individual, cultural conditions and global processes [55–58].

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