

Article

Effects of Gender and Social Network Use on High School Students' Emotional Well-Being during COVID-19

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Abstract: Various studies conducted during the COVID-19 pandemic have confirmed changes in online behaviour, with young people increasingly using social networks. This trend appears to correlate with a heightened risk of various psychological and emotional problems. The main aim of this study is to explore the patterns of social network use among high school students amidst the pandemic, particularly focusing on the presence of specific emotional problems and potential gender differences. In addition, this study aims to contribute to the existing body of knowledge on the influence of lockdown measures on adolescents. A probabilistic sample of $N = 825$ students from 20 high schools in Zagreb participated in this study. Alongside basic sociodemographic variables, this study assessed social network habits and emotional problems using the Depression Anxiety Stress Scales 21 (DASS-21). The findings indicate intensive social media engagement during the pandemic. The results of the MANOVA analysis (gender \times daily time on social media) show significant effects of both the time spent on social networks and gender on mental health, while no interaction effect was observed. Female students and those who spend more time on social media have higher levels of depression, anxiety, and stress symptoms. These findings underscore the need for addressing emotional problems and habits in the virtual environment of high school students and implementing appropriate preventive and treatment interventions.

Keywords: COVID-19; adolescents; emotional problems; social networks; internet



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1. Introduction

Over the last fifteen years, the use of the internet has become an integral part of most people's daily lives, especially among adolescents [1–3]. By using the internet, we perform numerous educational and work tasks, but it also serves us for the purposes of fun, relaxation, communication, and interactions with others. This pronounced presence in the virtual environment is confirmed by data stating that, at the beginning of 2020, there were approximately 4.54 billion active internet users worldwide, representing almost 60% of the world's population, while there were approximately 3.80 billion active users of at least one social network (almost 50% of the world's population) [4].

From early 2020 to May 2023, the entire world faced the COVID-19 pandemic, which brought about significant changes in people's everyday life as well as a variety of stressors, e.g., fear of contagion, fear for one's own health as well as for the health of loved ones, restriction of gatherings, cancellation of leisure activities, social isolation and distancing, switching to online classes, working from home, and national lockdowns [5–11]. Furthermore, measures to prevent the spread of infections have had many negative effects on various aspects of the economy, lifestyle, education, health, social life, and mental well-being [5–7,9,10]. The most common and significant negative influences on mental health are emotional problems related to anxiety, depression, and stress [12,13] and an excessive use of social networks [9,14,15]. In addition, intensified feelings of loneliness and isolation [9], negative emotions [16], negative effects on one's overall health [9,17],

increased substance use and behavioural addictions [6], as well as the impairment of different relationships should also not be ignored [18–20]. Adolescents, especially girls [21], are generally a vulnerable group for the development of mental health problems, and, under pandemic circumstances, when they were deprived of one of the most important needs at this developmental stage, i.e., direct interaction with peers, this vulnerability was even more pronounced [8,18,22].

Generally, the intensity of internet use increased during the pandemic [23–30]. At the beginning of 2023, shortly before the official declaration of the end of the pandemic in May [31], there were a total of about 5.16 billion active internet users (about 65% of the world's population) and about 4.76 billion active users of at least one social network (59.5% of the world's population) [32], representing a significant increase when compared with the 2020 data. If we focus on the young population, this trend is even more pronounced (up to 50% compared to the pre-pandemic levels) in different geographic locations [33–38]. Similar results emerged from a study conducted in December 2020 on a Croatian sample of high school students. More than 80% of adolescents reported that they were much more likely to be active on the internet during the pandemic, regardless of their school responsibilities [29]. Interestingly, most adolescents reported using social media more than they would have liked [36]. In addition to a more intense use of social media, their “active use” also increased, meaning that they were much more likely to post their own content and write comments on others' posts during the most severe epidemiological measures [39]. When it comes to the motivation for using social networks, coping with feelings of loneliness and a lack of physical contact, coping with anxiety, stress, and boredom, as well as connecting with others are emphasised as the most common reasons for a more intensive/active use of social networks among adolescents [36,40,41], while TikTok, Snapchat, and Instagram are reported as the most commonly used social networks [42], with girls being more active on social networks than boys [43].

The specific motivation for the above is of particular importance, as it has been repeatedly confirmed that those who engage in certain behaviours to alter their mood, cope with unpleasant emotions, etc., are more prone to developing an addiction. Furthermore, current research suggests that the specific objects of addiction play a less central role in the development of addiction and that addiction should be understood as a syndrome with multiple opportunistic manifestations. In other words, different addictions, including behavioural ones (gambling, video games, social networking), are the result of a similar underlying syndrome of addiction [44].

During the pandemic, the prevalence of mental health problems in the general population increased worldwide [45–48], including in Croatia [49–53]. The same trend was also observed in the adolescent population [22,54–59]. Globally, the prevalence of depression among young people was 25–35%, that of anxiety 20–30%, and that of stress 20–40%, depending on the geographic area, with the results clearly indicating a higher prevalence of problems among girls [48,55,60–64]. Research among Croatian adolescents suggests a similar tendency [65,66]. The best insight into these trends comes from a study in which a significant increase in emotional problems among high school students was found when comparing data between 2016 and 2021. Specifically, the prevalence of severe depression, anxiety, and stress symptoms in 2016 was 15.0%, 13.4%, and 20.2%, respectively, while, in December 2021, it increased to 20.6% for depression, 33.0% for anxiety, and 25.4% for stress [67]. When considering the results in the Croatian context, it should be noted that, in addition to the circumstances of the COVID-19 pandemic, Zagreb was hit by two devastating earthquakes, at the beginning of the first national lockdown in March 2020 and shortly thereafter.

Understanding the influence of social networks on adolescent well-being became one of the mental health priorities during the pandemic. It is undeniable that the atmosphere of fear and restrictive measures during the pandemic contributed to the above trends, but it is possible that they were also influenced by the frequency of social network use and vice versa, as studies confirm their reciprocal relationship [68–75]. In other words, a

“vicious circle” of increased social network use and emotional problems emerged, although the causal nature of this relationship is still under debate [76]. Regardless, adolescents themselves feel that their use of social media has a certain negative impact on their well-being [36], which certainly further underlines the importance of addressing this issue.

Given such clear trends in the intensity of internet use, as well as the prevalence of depression, anxiety, and stress among adolescents during the pandemic, it is not surprising that numerous studies have been conducted to address these phenomena. Gender is also a very well-studied variable, both in relation to online habits and emotional problems. However, a review of the literature reveals a research gap, i.e., it is noticeable that there are no studies in Croatia which simultaneously focus on the habits and frequency of social network use during the pandemic and the presence of emotional problems while also testing for gender differences.

2. Objective and Hypotheses

The main aim of this study is, therefore, to explore the characteristics of social network use by high school students during the pandemic, particularly with regard to the presence of certain emotional problems (depression, anxiety, and stress) and gender, and to contribute to the existing knowledge about the effects of lockdown on young people.

Following this main objective and considering the literature review on the latest scientific findings in the areas of online habits and emotional problems among adolescents, we hypothesize that the most frequently used social networks among high school students are Snapchat, TikTok, and Instagram (Hypothesis 1), with significant gender differences in the frequency of use of all social networks, such that girls use them more intensively (Hypothesis 2). We also expect a high prevalence of emotional problems (depression, anxiety, stress) in the studied sample (Hypothesis 3). Accordingly, our last hypothesis is that a more intensive daily use of social networks favours a stronger presence of emotional problems among adolescents, with significant gender effects (Hypothesis 4).

3. Materials and Methods

3.1. Study Sample

This research was conducted on a sample of $N = 825$ students from the first to the final grade of different high schools (three- and four-year vocational schools and grammar schools) in the city of Zagreb. The sample consisted of a total of 49.0% boys ($n = 404$), 50.7% girls ($n = 418$), and 0.3% ($n = 3$) of students who did not provide information about their gender. The participants' ages ranged from 14 to 20 years ($M_{age} = 16.65$ years; $SD_{age} = 1.208$).

The sample was probabilistic (randomly stratified), with the strata defined based on the official list from the Croatian Ministry of Science and Education, which contains all relevant information on schools, gender, and age distribution of the students in each school and class in the city of Zagreb for the 2020/2021 school year, during which the research was conducted. The above-mentioned sample was obtained by stepwise, multi-stage sampling according to the following three steps: in terms of the number of students in each high school and their ratio to each other, the sample size was first determined. Then, in the second step, the schools and, in the third step, the classes in which this research was conducted were randomly selected. This type of sampling allowed for the generalization of the results to the entire population of high school students in Zagreb.

3.2. Measures

To obtain information on basic demographic characteristics, individual questions were created about the participants' gender and age.

In the Questionnaire on the frequency and habits of social networks (SNs) use, the participants were asked about their activities on different social networks. The list of SNs was created following the definition of social networks as web-based services that allow individuals to construct a (semi)public profile, articulate a list of other users with

whom they share connections, and communicate [77]. On a five-point scale (0—never to 4—everyday), the participants answered how often they used (1) Facebook, (2) TikTok, (3) Snapchat, (4) Twitter, (5) Pinterest, and (6) Instagram. If they marked “every day”, we then asked them how many hours per day they spent on a particular SN (1. 1–3 h per day; 2. 3–5 h per day; 3. 5–8 h per day; and 4. more than 8 h per day). Although YouTube had been classified as a social network, it was excluded from this study because it is primarily used for watching videos, i.e., for consuming content [78], and, to a lesser extent, for direct sharing and everyday communication. To answer specific research hypotheses, a new variable was created related to the frequency of use of at least one social network and was recoded into a total of five categories [(1) less than every day; (2) 1–3 h per day; (3) 3–5 h per day; (4) 5–8 h per day; and (5) more than 8 h per day].

The DASS-21 questionnaire (Depression, Anxiety, Stress Scale; [79]) was administered to assess depression, anxiety, and stress. As a short form of the DASS-42 scale, it provides the advantage of taking less time to be administered (compared to DASS-42 and other clinical measures) while maintaining good psychometric properties in measuring negative emotional states of depression, anxiety, and stress. It is a self-reported questionnaire with 21 items (7 in each category) based on a four-point rating scale (0—never; 3—almost always). Croatian studies using DASS-21 demonstrate its good reliability and validity, with the Cronbach’s alpha for each dimension ranging from 0.80 to 0.94 [80–82]. Developmentally, DASS-21 is suitable for use with children 12 years of age and older [83].

3.3. Procedure and Compliance with Ethical Principles

This study was approved by the Ethics Committee of the Faculty of Education and Rehabilitation Sciences, University of Zagreb, and by the Croatian Ministry of Science and Education. The Education and Teacher Training Agency also gave a positive opinion. The consent of the school principals and the adolescents’ parents was also obtained. This study was conducted during the second semester of the 2020/2021 school year, using a “pencil-and-paper” self-report method. The students provided informed verbal consent to participate in this study. Participation was completely anonymous and voluntary, with the option to withdraw at any time.

3.4. Statistical Analysis

A test of the normality of the results’ distribution was carried out using asymmetry indices (skewness and kurtosis) for the dependent variables in this study (frequency of social network use and total score of the DASS-21 subscales) in relation to the entire sample and gender.

The results presented in Table 1 show that it was appropriate to use parametric statistics to test for differences in the frequency of use of Facebook, Snapchat, and TikTok regarding gender and the DASS-21 subscales, while non-parametric statistical methods were used for the remaining variables.

Table 1. Skewness, kurtosis, and Cronbach alpha values.

Variables (Theor. Range)	All Sample (N = 825)			Girls (n = 418)			Boys (n = 404)		
	Skew	Kurt	α	Skew	Kurt	α	Skew	Kurt	α
Freq.—Facebook (0–4)	1.293	0.0252	-	1.462	0.830	-	1.129	-0.222	-
Freq.—Instagram (0–4)	-2.695	6.072	-	-3.149	8.767	-	-2.375	4.457	-
Freq.—Snapchat (0–4)	-1.077	-0.669	-	-1.352	0.053	-	-0.863	-1.118	-
Freq.—Twitter (0–4)	2.311	4.354	-	2.456	5.059	-	2.224	4.017	-
Freq.—TikTok (0–4)	-0.221	-1.805	-	-0.721	-1.294	-	0.248	-1.795	-
Freq.—Pinterest (0–4)	1.233	0.174	-	0.385	-1.201	-	3.872	16.537	-

Table 1. Cont.

Variables (Theor. Range)	All Sample (N = 825)			Girls (n = 418)			Boys (n = 404)		
	Skew	Kurt	α	Skew	Kurt	α	Skew	Kurt	α
DASS-21 Depression (0–42)	0.836	−0.153	0.892	0.631	−0.500	0.886	1.085	0.453	0.885
DASS-21 Anxiety (0–42)	0.873	0.117	0.857	0.610	−0.301	0.840	1.212	1.095	0.851
DASS-21 Stress (0–42)	0.498	−0.647	0.882	0.164	−0.968	0.878	0.812	0.256	0.855

Legend: SKEW—skewness; KURT—kurtosis; and α —Cronbach alpha. Note: For samples larger than $N = 300$, the absolute values of skewness and kurtosis are observed, and the results for SKEW must be between -2.00 and $+2.00$ and, for KURT, between -7.00 and $+7.00$ to speak of a normal distribution of the results [84]. Accordingly, the absolute values of SKEW and KURT are used to check the distribution of the results.

4. Results and Discussion

The main goal of this study was to explore the characteristics of high school students' use of social networks during the pandemic, particularly regarding the presence of certain emotional problems (depression, anxiety, and stress) and gender.

Guided by the first hypothesis, we wanted to explore which SNs are most frequently used by high school students. The first part of Table 2 shows that Twitter (79.2%), Pinterest (61.3%), and Facebook (59.8%) are SNs that most students never used. It can be assumed that adolescents do not find them interesting, which is not surprising since Twitter is mostly used for business and political topics, while Pinterest focuses mainly on art, design, and culinary recipes. Moreover, even though Facebook was the first SN to achieve global success, it does not offer attractive ways to communicate and share media content [85], and these results are consistent with statistical data showing that 25–34-year-olds form Facebook's largest audience [86]. Only a small proportion of high school students have not used other social networks: 37.8% of students have never used TikTok, 20.4% Snapchat, and there is almost no high school student who has never used Instagram (5.3%).

Table 2. Frequency of social networks use among high school students ($N = 825$).

Social Network	No (Never)	Yes			
		1–2 Times a Month	Approx. Once a Week	Several Times a Week	Everyday
FACEBOOK	493 (59.8%)	135 (16.4%)	57 (6.9%)	61 (7.4%)	79 (9.6%)
INSTAGRAM	44 (5.3%)	20 (2.4%)	15 (1.8%)	66 (8.0%)	680 (82.4%)
SNAPCHAT	168 (20.4%)	32 (3.9%)	24 (2.9%)	60 (7.3%)	541 (65.6%)
TWITTER	653 (79.2%)	71 (8.6%)	39 (4.7%)	44 (5.3%)	18 (2.2%)
TIKTOK	312 (37.8%)	29 (3.5%)	32 (3.9%)	105 (12.7%)	347 (42.1%)
PINTEREST	506 (61.3%)	103 (12.5%)	89 (10.8%)	78 (9.5%)	49 (5.9%)

In addition to lifetime prevalence and because of the diversity of content and the opportunities they provide, it is important to explore the extent to which young people use particular social networks. The results show that Instagram (90.4%), Snapchat (72.9%), and TikTok (54.8%) were used most frequently (several times per week and daily) during the pandemic, which is consistent with other studies [42,85,87]. The above is not surprising, considering that these are newer social networks that, with their technical possibilities, offer young people a fun, creative, exciting, and innovative way to interact.

The fact that some adolescents use only one social network and others have active profiles on several SNs makes it difficult to compare data on the frequency of social network use in general with other studies. To overcome this limiting circumstance, a new variable was created—frequency of daily use of at least one SN.

From the data presented in Figure 1, more than 20% of high school students use at least one SN more than five hours per day, with slightly more than 8% using at least one SN

more than 8 h per day. Adding the percentage of students who use at least one SN 3–5 h per day, the above data corroborate the results of recent studies conducted with Croatian high school students, according to which about 30% of young people spend more than four hours per day using digital devices and the internet [29,88,89]. These findings are also in line with the results of studies conducted in various European countries, which confirm the intensive use of social networks among the young population. Just as in Croatia, around 30% of students aged 13–18 use social networks for more than 4 h a day [90–92].

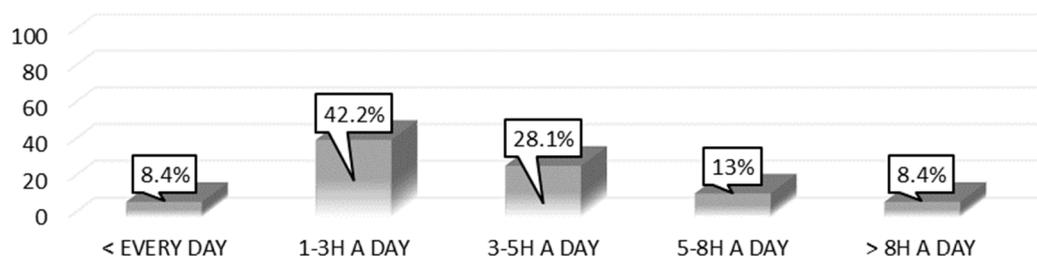


Figure 1. Frequency of daily use of at least one social network (N = 825).

To gain insight into possible gender differences in the use of different SNs (Hypothesis 2), the Mann–Whitney U-test and the T-test for independent samples were performed (depending on the normality of the distribution). The results are presented in Table 3.

Table 3. (a). Gender differences in the use of certain social networks (N = 825). (b). Gender differences in the use of certain social networks (N = 825).

(a)								
SN	Theor. Range	Gender	M	SD	MR	MW U	p	r
INSTAGRAM	0–4	M	3.52	1.092	393.51	77,167.00	0.001	0.11
		F	3.68	0.950	428.89			
TWITTER	0–4	M	0.45	0.968	418.72	81,519.50	0.226	-
		F	0.39	0.931	404.52			
PINTEREST	0–4	M	0.19	0.608	295.70	37,652.50	0.000	0.55
		F	1.51	1.404	523.42			
(b)								
SN	Theor. Range	Gender	M	SD	T-TEST	p	r	
FACEBOOK	0–4	M	1.01	1.412	0.582 (df = 124)	0.56	-	
		F	0.81	1.280				
SNAPCHAT	0–4	M	2.77	1.722	–2.041 (df = 566)	0.40	0.22	
		F	3.12	1.518				
TIKTOK	0–4	M	1.72	1.811	–3.191 (df = 381)	0.001	0.51	
		F	2.63	1.723				

Legend: M—mean; SD—standard deviation; MR—mean rank; MW U—Mann–Whitney U test, p—significance; r—effect size; $r < 0.30$ —small effect; $0.30 < r < 0.50$ —moderate effect; and $r > 0.50$ —large effect. Note: Although this is a non-parametric statistical analysis, the table also shows means and standard deviations to provide an additional explanation of the results obtained. Legend: M—mean; SD—standard deviation; T-TEST—independent samples T-TEST; p—significance; r—effect size (Cohen’s d); $r = 0.20$ —small effect; $r = 0.50$ —moderate effect; and $r = 0.80$ —large effect (Cohen, 1988, according to [93]).

The results indicate gender differences in such a way that girls use almost all social networks (Instagram, Snapchat, TikTok, and Pinterest) to a greater extent. Effect sizes were calculated to further test the strength of these differences. The largest effect ($r > 0.50$) is for Pinterest and TikTok, which are likely to be less attractive to males. For other SNs

with significant gender differences, the effects are small. No gender differences have been found in the use of Facebook and Twitter, as they are the least used SNs. These results were expected and consistent with the findings of recent studies that almost unambiguously point to the same trends when it comes to gender-specific differences [36]. Furthermore, Leonhardt and Overå [43] conclude in a sample of 5607 Norwegian adolescents that boys are up to five times more likely to play online video games than girls, while girls are the dominant users of social networking sites. Moreover, girls indicate that the social environment encourages them less to play (due to elements of violence and the like), while boys indicate that they feel a stronger sense of belonging in the gaming community than in social networking sites [43]. Another explanation for these gender differences can be found in the motivation for using social networks, which was confirmed by Su et al. [94] in their meta-analysis. Females are more likely to use social media as a means of interaction, while males are more likely to use them for entertainment. Moreover, females may use SNs to fill voids when depressed or when their social needs are not fully met [94]. Since the motivation to use SNs as a coping strategy is one of the significant predictors of a more intensive use and the development of severe problems [85], this finding implies the need to explore the importance of gender and intensity of SN use in relation to emotional problems, which is addressed in the following hypotheses.

According to the literature review presented in the introduction of this article, there is evidence that emotional problems increased in young people during the pandemic due to numerous stressful situations and restrictive measures. Therefore, we were interested in the extent to which emotional problems were present among Zagreb high school students in this specific period (Hypothesis 3). The results are presented in Table 4.

Table 4. Emotional problems among high school students during COVID-19 ($N = 825$).

DASS-21	Normal	Mild	Moderate	Severe	Extremely Severe
STRESS	54.4%	11.5%	13.5%	13.0%	7.6%
ANXIETY	40.5%	6.9%	19.9%	8.8%	23.9%
DEPRESSION	48.1%	11.5%	18.2%	9.7%	12.5%

It was found that 20.6% of high school students met the criteria for severe and extremely severe levels of stress, 32.7% of them met the criteria for the same level of anxiety, and 22.2% of them for problems related to depression. The above results are in line with trends observed in studies worldwide, confirming that COVID-19 resulted in psychological distress and highlighted vulnerable groups [95,96]. In the Croatian context, a study conducted in December 2021 [67] found that the percentage of adolescents who met the criteria for high levels of stress, anxiety, and depression was 25.4%, 33.0%, and 20.6%, respectively. If we compare these data with those from 2016 in a sample of high school students (severe depression—15.0%, anxiety—13.4%, and stress—20.2% [67]), we can see that emotional problems have increased significantly. Even though worrying, this result is expected, considering the COVID-19 circumstances. It should also be remembered that, during the first lockdown, right at the beginning of the pandemic, Zagreb was struck by one of the strongest earthquakes in the last 100 years, which also affected the sense of security and housing situation of many families. This circumstance could also have an influence on the stress and anxiety levels of high school students in the measured period.

As elaborated in the previous text, research continuously confirms significant gender differences in both the characteristics of social network use [36,43,75,85] and the prevalence of mental health problems [48,55,60–64]. There is also evidence that a more intensive use of social networks influences the presence of emotional problems and vice versa [68–75]. However, the potential interaction between gender and SN usage intensity in terms of the influence on emotional problems has not been sufficiently investigated. Therefore, one of the goals of this paper is to contribute to overcoming this research gap by addressing the last hypothesis (Hypothesis 4), which aims to explore whether gender, a more intensive daily

use of SNs, and their potential interaction influence the greater occurrence of emotional problems in adolescents. To answer this question, a MANOVA was performed (Table 5).

The results indicate strong gender effects on the presence of emotional problems, which is consistent with the previous relevant studies which show more pronounced symptoms of depression, anxiety, and stress among girls [48,55,60–64,97]. The higher susceptibility (especially during adolescence) of females to emotional problems is often explained by their earlier onset of puberty and the (especially hormonal) changes that occur during this time, a different perception of psychosocial stressors compared to males, body image satisfaction, and a greater sensitivity to poor personal relationships [97–99].

The frequency of SN use has strong effects in the way in which adolescents who spend more time using SNs have more emotional problems, which is also to be expected, even though we cannot draw any conclusions about the causal nature of this relationship. Our findings are in line with numerous studies that have also found a reciprocal relationship between the intensity of social network use and emotional problems in high school students, in such a way that a more intensive use of SNs affects an increase in emotional problems and that the presence of emotional problems contributes to a more intensive use of SNs [68–76].

The effect of the interaction between gender and frequency of SNs use on the presence of emotional problems is not significant, i.e., there is no interaction. In other words, regardless of gender, students who use SNs more intensively have more emotional problems, a matter which is presented in Figure 2. Again, this result is not entirely surprising. Although the intensity of social network use is not a decisive criterion in problems related to their excessive use, its significant contribution to adverse psychosocial consequences is beyond question. Namely, if someone (regardless of gender) uses social networks extensively and satisfies psychological needs predominantly through them, it is to be expected that the scope and intensity of their personal interactions will decrease and their psychosocial functioning will potentially be impaired [100,101]. This, in turn, is one of the key criteria when we talk about problematic use, which includes severe psychological problems (stress, depression, anxiety, etc.) as very common psychological consequences. The fact that the effect of gender was not found to be significant, although this variable is a constant when it comes to predictors and risk factors for the development of mental health problems, confirms the importance of the intensity of SNs use. In addition, it should be taken into account that research also proves that people with pronounced mental health problems use social networks to a greater extent and that their excessive use can be a symptom of the aforementioned problems [68–75].

Given all this, this study confirms that the relationship between these variables deserves further scientific attention.

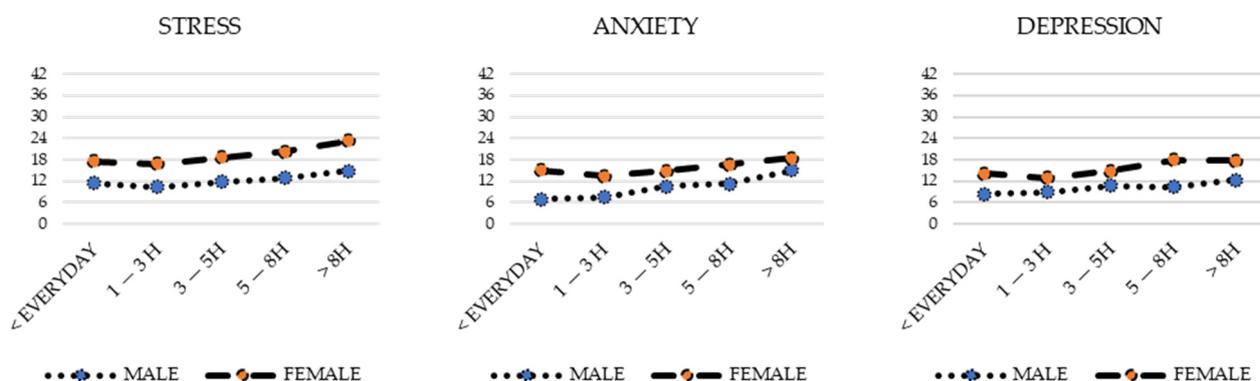


Figure 2. Interaction effects: gender x frequency of SN use ($N = 825$).

Table 5. MANOVA results (N = 825).

Emotional Problems	Groups														Manova		
	Gender				Frequency of Daily Social Networks Use										Gender	SN Daily Frequency	Gender × Frequency
	Male		Female		<Everyday		1–3 h		3–5 h		5–8 h		>8 h				
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
STRESS	11.35	9.292	18.78	11.195	13.65	10.628	12.95	10.184	16.13	11.035	17.18	11.243	20.99	11.317	57.360 ***	4.410 **	0.163
ANXIETY	8.84	8.927	15.08	10.766	9.79	9.799	9.79	9.606	13.24	10.287	14.37	10.320	17.59	11.700	37.705 ***	6.985 ***	0.711
DEPRESSION	9.54	9.716	15.01	11.247	10.47	10.504	10.46	10.340	13.36	10.822	14.77	11.306	16.26	11.287	31.908 ***	3.566 **	0.645

Legend: *** $p < 0.001$; ** $p < 0.01$

5. Limitations and Implications for Future Research

Although this study attempted to overcome some limitations of previous studies, there are still several limitations to consider when interpreting and applying these findings. First, it relies solely on the self-report method, which has several advantages but also limitations, such as honesty, introspective ability, question interpretation, response bias, etc. [102]. However, this method was the most appropriate choice (especially under pandemic circumstances) and allowed us to include a large sample of high school students and gain insight into their social network habits and behaviours as well as emotional problems.

Another limitation is certainly the use of a transversal research design that does not allow for causal inferences. The list of social networks was compiled based on numerous data on their worldwide popularity. From the research results, it appears that some social networks (such as Facebook, Twitter, and Pinterest), despite being on the list of the most popular networks among youths, represent SNs that are hardly used by Zagreb high school students, which opens a possibility that SNs which had been potentially relevant for the surveyed youth at that time were not included (such as Discord, BeReal, and the like). Furthermore, the high frequency of social network use (besides the pandemic and its restrictions) could certainly be influenced by the development of technology as well as by the fact that today's youths are a generation of millennials who have grown up with an extraordinary availability of digital devices, and the above definitely needs to be verified by further (post-COVID) research.

However, this study included a representative sample of participants, which allows for the generalization of the results to the entire population of Zagreb high school students and enables us to draw important practical and scientific implications for future research. In terms of practical implications, there is no doubt that young people use various social networks extensively and that they spend a significant number of hours of their daily time on them. Of particular concern is the high prevalence of stress, anxiety, and depression in such a young population. As this trend is confirmed by other research works, there is an undeniable need to adequately address this problem in practice and make young people's mental health a public health priority. The contribution of this research is certainly the finding that the intensity of social network use and the emotional problems of young people are related (regardless of gender), which, in turn, underlines the need to invest efforts in teaching children and adolescents how to use the internet in a balanced way.

Since the relationship between these two constructs is not entirely clear, longitudinal studies must be conducted, which, among many other benefits, allow for causal inferences, the observation of the evolution of problems, etc. Such studies could also identify protective factors that could be strengthened through preventive interventions to help young people learn to use social networks in ways that contribute to rather than detract from their quality of life.

In addition, it would be good to consider other variables that might have an influence on a more frequent use of SNs and emotional problems, such as fear, peer isolation, and shyness but also cultural differences, etc. Finally, it would certainly be useful to re-examine the relationship between emotional problems and SN use after the pandemic to determine if the same trends persist.

6. Conclusions

Internet use is inextricably linked to many activities of daily life, and it is the group of young people born in the digital age that represents the population that uses the internet most intensively. There is indisputable evidence that intensive and especially excessive internet use is associated with emotional problems. This study builds on the literature on this topic by demonstrating the influence of both gender and intensity of the use of SNs on emotional problems. More specifically, the results show that a more intensive use of SNs is associated with more emotional problems, regardless of gender. Given this, there is strong evidence that this relationship needs further investigation, particularly through studies with longitudinal designs. In addition to the theoretical and scientific implications of this

study, it is important to note its practical significance. Although the internet is and will remain a constant in our lives, tools and competencies for a balanced and responsible use of the internet need to be at the heart of policies and interventions aimed at young people facing the challenges of growing up, especially in difficult and unpredictable circumstances.

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Informed Consent Statement: Informed consent was obtained from all the subjects involved in this study and their parents.

Data Availability Statement: The data presented in this study are available on request from the corresponding author due to the need to safeguard the privacy of the participants and adhere to ethical considerations regarding data sharing. In their informed consent, participants were informed that the data were confidential and that individual responses would never be known, as data analysis would be performed with all participants combined.

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