The Influence of the Internet and Social Networks on Behavioral Problems of Primary and Secondary School Students in Croatia

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Abstract - Social networks are a form of Internet service designed to connect users but nowadays they are used for many other purposes. Considering the amount of time spent interacting with social networks, they have a major impact on the development of children and adolescents. An empirical study presented in this paper aims to determine the extent to which social networks contribute to problems in the behavior of primary and secondary school students. Data were collected using the questionnaire whereas hypotheses were explored with t-tests. The sample of study participants was composed of 105 primary school students enrolled in seventh and eighth grades and 106 secondary school students enrolled in third and fourth grades from Istria County and Primorsko-Goranska County. The analysis of collected data revealed that neither primary nor secondary school students perceive themselves as overly addicted to the Internet and social networks. As a consequence of the impact of social networks on their lives, secondary school students are more prone to aggressive behavior and are more likely to be depressed. However, no statistically significant differences between primary and secondary school students were found in terms of the degree to which they are feeling lonely due to the frequent use of social networks.

Keywords - Behavioral Problems; Internet and Social Network Addiction; Aggressive Behavior; Cyberbullying; Loneliness; Depression; Primary School; Secondary School; Croatia; Empirical Study

I. INTRODUCTION

Social networks are web services that enable people to communicate synchronously asynchronously, or collaborate, and share a variety of multimedia content [15]. Facebook, Instagram, Snapchat, Twitter, TikTok, WhatsApp, Viber, and YouTube are nowadays the most popular social networks [5]. Young people are growing up with social media and often use them as an escape from what may seem like an ugly reality. Although social networks have many benefits, their use can also harm youth and adolescents. The content presented on social networks often creates unrealistic expectations while their excessive use results in reduced physical activity and lack of in-person social interactions which in turn leads to changes in behavior and insufficiently developed motor skills of young people. Various breeds of social interaction enable young people to develop a better understanding of themselves and their relationships with others. However, interaction on social networks requires young people a plethora of skills that are quite different from those necessary for casual conversation with friends [4]. Eight- to eighteen-year-olds spend more time using social networks than on any other activity except (perhaps) sleeping. On average, they are spending seven and a half hours a day interacting with social networks [17]. Considering the amount and questionable integrity of content delivered through social networks, young people can easily become confused, deceived, and deluded which prevents them from developing their own opinion, character, and rational thinking.

Social network algorithms are becoming more sophisticated to keep users' attention on content provided by them for as long as possible. The insistent sounds and vibrations of notifications attract the attention of users and create an addiction to constantly checking the status and newly posted content on social networks. Due to the fastpaced lifestyle in which the Internet and social networks play an important role, young people are becoming antisocial, depressed, and unable to communicate well in real life. In addition, due to the inappropriate and unnatural position of the body in which they search the Internet and use social networks, young people are increasingly experiencing neck and spine health issues. Therefore, it is of great importance to educate young people to become more careful and responsible in interactions with the Internet and social networks. The focus in that respect is primarily on prevention through actions that promote positive youth development rather than intervention among delinquents [4].

II. METHODOLOGY

A. Research Questions

Current studies indicate that behavioral disorders such as the Internet and social network addiction, aggressiveness, loneliness, and depression are interrelated. Kırcaburun [13] discovered that daily Internet use and social media addiction affect depression in adolescents. Findings of a study conducted by Giordano et al. [6] revealed that male adolescents who spend much time online and have a high level of social media addiction are very likely to commit acts of cyberbullying. Giumetti and

Kowalski [7] emphasized that cyberbullying via social media can have negative effects on well-being, including psychological distress, decreased life satisfaction, and suicidal ideation. Jiang et al. [10] found that loneliness significantly affects depression. The objective of this paper is to determine the extent to which the use of the Internet and social networks contributes to behavioral disorders in primary and secondary school adolescents in Croatia. In that respect, the following research questions were raised: (1) Does the extent of an addiction to the Internet and social networks differ significantly between primary and secondary school students? (2) Does using social networks contributes to aggressive behavior in primary and secondary school students? (3) Does frequent use of social networks cause loneliness in primary school students? (4) Does using social networks leads to depression in secondary school students?

B. Hypotheses

Adolescents' addiction to the use of social media and the Internet has become a pressing societal problem [16]. Aimless surfing on the Internet can over time result in the neglect of socialization, primarily with parents and then with friends. According to the findings of a study on Internet addiction of secondary school students in Međimurje County in Croatia [3], there is a correlation between the time spent on the Internet and the neglect of school duties. Considering that adolescents easily abandon their daily activities and replace them with time spent online [11], we are proposing the following hypotheses:

- H1. Primary school students are more addicted to the Internet and social networks than secondary school students.
- H2. Primary school students are more likely to neglect their daily activities due to the use of social networks than secondary school students.

Aggressive behavior in the form of peer violence and harassment is an increasing social problem in the lives of young people. As they grow up, adolescents more often use language to express aggression. One of the reasons for this is their awareness that physical aggressiveness is more often condemned by society [2]. When applied in an online environment, aggressive behavior is most commonly referred to as cyberbullying and mainly consists of sending abusive or humiliating messages. Girls are usually cyber victims, whereas boys are commonly cyber perpetrators [9]. Although Aizenkot et al. [1] found that cyberbullying occurs more often in primary school compared to secondary school, we are proposing the following hypothesis:

H3. Secondary school students who use social networks are more likely to engage in online aggressive behavior than primary school students.

Since bullying can easily expand from virtual to real social spaces such as classrooms, violate classroom social climate, and disrupt students' sense of belonging in class [12], we are proposing the following hypothesis:

H4. Secondary school students who use social networks are more likely to engage in aggressive behavior in real life than primary school students.

Depression in adolescents is characterized by feelings of loneliness, helplessness, anger, and disappointment with family and friends who do not understand them [19]. Loneliness caused by an external factor such as the use of social networks can lead a person to the point where (s)he can no longer reason and needs to seek professional help to get better. Nowadays there are more and more young people who feel lonely and rejected by the people around them. According to Yu et al. [22], loneliness is a direct risk factor for social networking addiction among youth. In that respect, the following hypothesis is proposed:

H5. Primary school students who use social networks feel more lonely than secondary school students.

Being a common mental disorder, depression has been recognized as a leading cause of disability worldwide [21] which affects more and more people every year [14]. Depression often occurs at the beginning of secondary school, or even earlier [18]. Findings of a recent study [20] indicate that gender, social media usage, and mattering are strongly associated with adolescent depressive symptom reporting. Therefore, we are proposing the following hypothesis:

H6. Secondary school students who use social networks are more prone to depression than primary school students.

C. Sample and Apparatus

Participants in the empirical study were seventh and eighth-grade primary school students and third and fourth-grade secondary school students. The study was conducted in six schools located in Istria County and six schools from Primorsko-Goranska County in Croatia. Such a distribution of students was chosen because seventh and eighth graders of primary school are entering puberty thus representing early adolescents while third and fourth graders of secondary school belong to the group of middle to late adolescents. Data was collected using an online questionnaire that was created and administered with Google Forms. The study participants needed 10 minutes to complete the questionnaire which consisted of two parts. The first part of the questionnaire was created for gathering respondents' demographics (8 items) while the second part was designed for examining students' perception of (1) their addiction to the Internet and social networks (P1; 6 items), (2) their neglect of daily activities for the sake of using social networks (P2; 5 items), (3) their aggressive behavior on social networks (P3; 5 items), (4) their aggressive behavior in real life (P4; 5 items), (5) their feeling of loneliness due to the use of social networks (P5; 5 items), and (6) their tendency to depression due to the interaction with social networks (P6; 6 items). Responses to the items in the second part of the questionnaire were modulated on a five-point Likert scale (1 – strongly agree, 5 – strongly disagree). Data that were collected with questionnaire items designed for measuring facets of the aforementioned constructs were combined into six (P1 to P6) single-score discrete numerical values, each of them representing the sum of all responses to all items allocated to a particular construct. The internal consistency of the aforementioned

constructs was explored with Cronbach's alpha coefficient [8]. The proposed hypotheses were examined with independent samples t-tests in SAS 9.4 statistical software where the first sample (GRUPA 1) refers to primary school students while the second sample (GRUPA 2) pertains to secondary school students.

III. RESULTS

A. Participants

A total of 211 subjects took part in the study where 105 of them were primary school students while 106 were secondary school students. They ranged in age from 12 to 19 years (M = 14.87, SD = 2.1852). The majority of them (62.6%) were girls. As shown in Figure 1, Viber (90.2%) and Instagram (86.9%) are the most commonly consumed whereas Facebook (31.8%) and Twitter (20.1%) appeared to be two of the least used social networks by study participants.

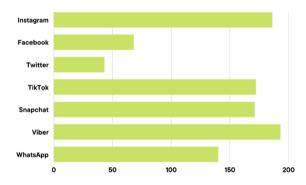


Figure 1. The popularity of social networks among study participants

Study results presented in Figure 2 indicate that 79.4% of students are using social networks at least one to three hours a day while findings reported in Figure 3 point out that 68.5% of respondents is interacting with social networks at least four to seven times a day.

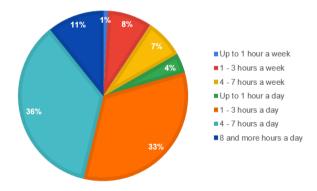


Figure 2. Frequency of using social networks expressed in hours

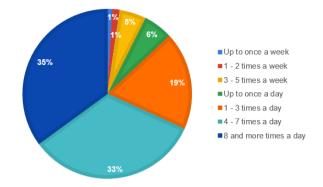


Figure 3. Frequency of using social networks expressed in the number of interactions

B. Findings

As shown in Table 1 in the Appendix, Cronbach's alpha values were in the range between 0.684 and 0.962 which is acceptable for exploratory studies [8] and implies that the reliability of scales is deemed adequate.

The analysis of collected data presented in Figure 4 uncovered that there is no significant difference (t(209)=1.11, p=0.2698) between primary (M = 19.0667) and secondary (M = 18.2830) school students in the extent to which they perceive their addiction to the Internet and social networks. Nevertheless, compared to primary school students, secondary school students are spending slightly more time on the Internet and checking posts on social networks which is why they are feeling somewhat more irritated when they are prevented from doing so. In that respect, the H1 hypothesis was rejected.

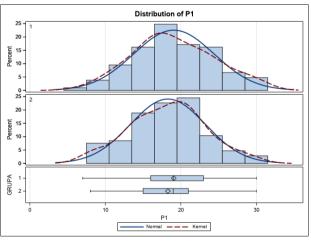


Figure 4. Students' perception of their addiction to the Internet and social networks

As shown in Figure 5, no significant difference (t(209)=1.43, p=0.1545) exists between primary (M=18.8571) and secondary (M=18.0094) school students in the degree to which they are neglecting their daily activities for the sake of using social networks. Although secondary school students are using the Internet and social networks a little less than primary school students when they are around their peers, they are staying awake a bit longer to check posts on social networks and are disregarding their study obligations a little more than

primary school students. Therefore, hypothesis H2 was rejected.

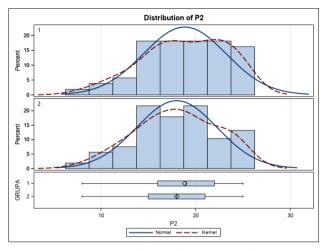


Figure 5. Students' perception of their neglect of daily activities for the sake of using social networks

Results of data analysis presented in Figure 6 indicate that secondary school students (M=21.3774) who use social networks are significantly (t(209)=2.90, p=0.0045) more likely to engage in aggressive behavior than primary school students (M=23.5429) thus providing support for H3 hypothesis. Although most of the study participants are not inclined to aggressive behavior on social networks, significantly more secondary school students tend to create fake profiles to insult and harass others or put them in embarrassing situations.

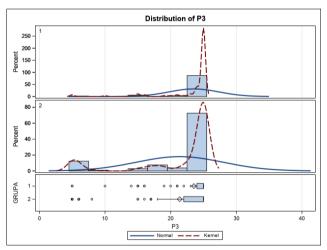


Figure 6. Students' perception of their aggressive behavior on social networks

As illustrated in Figure 7, we also discovered that secondary school students (M = 21.1981) are significantly more prone (t(209)=2.55, p=0.0122) to aggressive behavior in real life than primary school students (M = 22.8667) which provides support for H4 hypothesis. While neither primary school nor secondary school students consider their behavior or actions to be particularly aggressive, secondary school students are more likely to copy the aggressive behavior they have

been exposed to and have experienced on social networks into their in-person relationships with others.

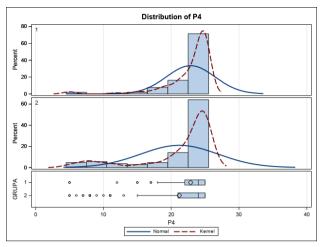


Figure 7. Students' perception of their aggressive behavior in real life

Study findings reported in Figure 8 point out that no significant difference (t(209)=0.94, p=0.3499) was found between primary (M=19.0667) and secondary (M=18.4057) school students concerning the extent to which they are feeling lonely due to the use of social networks thus rejecting the H5 hypothesis. While primary school students are more likely to use social networks when feeling lonely, secondary school students are going to feel lonelier and more rejected because they think they are not up to their peers who present themselves on social networks.

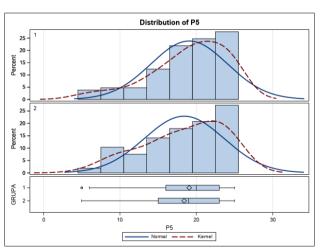


Figure 8. Students' perception of their feeling of loneliness due to the use of social networks

Study findings reported in Figure 9 point out that secondary school students (M = 21.2264) who use social networks are significantly more inclined (t(209)=2.43, p=0.0158) to depression than primary school students (M = 23.2857) thus providing support for H6 hypothesis. This is because secondary school students are more susceptible to changes in mood and interests and run away from reality into the virtual world much faster when they feel misunderstood and hurt.

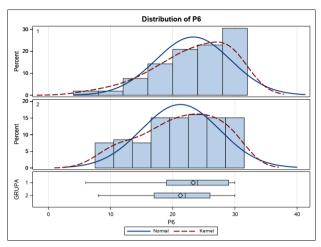


Figure 9. Students' perception of their tendency to depression due to the use of social networks

Responses of primary and secondary school students to questionnaire items designed for examining the perceived effect of social networks on their behavioral issues are summarized in Table 1 (see Appendix).

IV. CONCLUSION

Social networks have nowadays infiltrated all aspects of human activity, and the content posted on them is massively consumed by people of all age groups. The use of social networks offers many benefits to young people, from the faster acquisition of knowledge and development of interpersonal skills to networking, collaboration, and exchange of artifacts with their peers. However, interaction with social networks also has its dark side because it significantly affects an individual's feelings, self-confidence, and behavior. This is particularly true for primary and secondary school students who grow up with social networks.

The objective of this paper was to discover to what extent the use of the Internet and social networks contributes to behavioral problems in primary and secondary school students. The analysis of collected data revealed that secondary school students, when compared to primary school students, spend more time on the Internet by posting and consuming content on social networks, which is why they often stay up late and neglect their duties such as studying. However, no significant difference was found between these two groups of study participants related to the extent to which they perceive themselves as addicted to the Internet and social networks as well as to the degree to which they are disregarding their life habits due to using social networks. We also found that secondary school students are more likely to be violent towards others through social networks, especially when no one knows their identity, and transfer such behavior to their in-person interactions with others. Finally, while no significant difference was discovered between primary and secondary school students concerning the degree to which they are feeling lonely as a result of using social networks, it appeared that secondary school students who use social networks are significantly more prone to depression than primary school students.

The reported findings can be used by researchers as a backbone for future studies in the field while practitioners can consider them when developing and optimizing algorithms for displaying content that is adapted to the age of social network users. They can also serve as a foundation for developing preventive programs and intervention programs for students, teachers, parents, and all other interested parties. The proposed questionnaire can be employed for measuring the effect of social networks on the behavioral problems of their users at all levels of education and adapted for the same purpose outside the educational ecosystem.

Like all other empirical studies, this one also has limitations that need to be acknowledged. Considering that study participants were students from only two Croatian counties and that a more heterogeneous sample structure in terms of students' origin and gender representation could provide significantly different responses, reported findings should be interpreted cautiously.

To draw generalizable sound conclusions and to examine the robustness of findings, in our future work, we are planning to further examine the psychometric features of the measuring instrument and explore the interplay of proposed constructs.

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APPENDIX

TABLE I. RESPONSES OF STUDY PARTICIPANTS TO QUESTIONNAIRE ITEMS RELATED TO PERCEIVED INFLUENCE OF SOCIAL NETWORKS ON THEIR BEHAVIORAL PROBLEMS

	Primary school students		Secondary school students	
	M	SD	M	SD
Perceived Addiction to the Internet and Social Networks (Cronbach's alpha = 0.684)	19.07	5.312	18.28	4.972
ADD1. I spend my free time on the Internet.	2.76	1.287	2.68	1.263
ADD2. I am trying to reduce the time spent on the Internet, but I am not succeeding.	3.17	1.444	3.10	1.317
ADD3. Connecting to the Internet and checking social networks has become my first activity of the day.	3.16	1.493	2.93	1.452
ADD4. Every post on social networks is important to me.	4.00	1.310	3.79	1.445
ADD5. When I have nothing to do, I use social networks to avoid being bored.	2.41	1.394	2.32	1.329
ADD6. I feel irritable when I do not have access to the Internet.	3.51	1.376	3.44	1.333
Perceived Neglect of Daily Activities (Cronbach's alpha = 0.696)	18.86	4.371	18.01	4.246
NEG1. When I hang out with friends, I constantly use the Internet and social networks.	3.79	1.133	3.87	1.133
NEG2. I scroll through new posts on social networks until late at night.	3.47	1.443	3.28	1.280
NEG3. Due to the use of social networks, I neglect my life habits.	3.72	1.257	3.48	1.334
NEG4. I do not study enough because I am constantly checking new posts on social networks.	3.61	1.351	3.36	1.341
NEG5. Using the Internet is so important to me that I avoid in-person communication with friends.	4.27	1.154	4.01	1.314
Perceived Aggressive Behavior on Social Networks (Cronbach's alpha = 0.962)	23.54	3.811	21.38	6.654
AGS1. I have a fake profile on social networks that I use to harass others.	4.65	1.020	4.20	1.450
AGS2. I like to insult others through social networks because they do not know who I am.	4.70	0.860	4.26	1.403
AGS3. I am violent towards others through social networks.	4.72	0.877	4.35	1.367
AGS4. I send abusive or humiliating messages through social networks.	4.71	0.847	4.26	1.403
AGS5. I intentionally forward messages, photos, or recordings that may embarrass others.	4.66	0.857	4.24	1.400
Perceived Aggressive Behavior in Real Life (Cronbach's alpha = 0.893)	22.87	3.574	21.20	5.700
AGR1. I put the violence that is shown on social networks into action.	4.62	0.958	4.36	1.269
AGR2. I manipulate other people easily.	4.36	1.159	3.91	1.357
AGR3. I deliberately treat others badly because I have seen it on the Internet and social networks.	4.73	0.808	4.30	1.361
AGR4. My behavior has become aggressive due to exposure to social networks.	4.52	0.965	4.31	1.269
AGR5. Because of using the Internet and social networks, I easily get into conflicts.	4.53	0.872	4.28	1.265
Perceived Feeling of Loneliness (Cronbach's alpha = 0.792)	19.07	5.024	18.41	5.222
LON1. The feeling of loneliness disappears when I use social networks.	3.72	1.365	3.60	1.302
LON2. When I feel lonely, I reach for social networks.	3.03	1.545	3.15	1.344
LON3. I feel lonely and rejected because I do not think I am like my peers portrayed on social networks.	4.21	1.221	4.07	1.399
LON4. I like to be at the center of attention as promoted by social networks.	4.07	1.344	4.07	1.312
LON5. After excessive use of the Internet and social networks, I feel quite lonely.	4.03	1.299	3.52	1.604
Perceived Tendency to Depression (Cronbach's alpha = 0.832)	23.29	6.017	21.23	6.268
DEP1. I feel uneasy among friends when I cannot use social networks.	4.34	1.173	3.78	1.436
DEP2. I find it easier to type with friends than to communicate with them in person.	3.83	1.356	3.83	1.307
DEP3. I spend a lot of time switching between social networks.	3.34	1.400	2.94	1.420
DEP4. I constantly check social networks because reality seems unbearable to me.	3.98	1.317	3.70	1.382
DEP5. I easily lose interest in activities that used to make me happy and prefer to spend time on the Internet instead.	3.99	1.307	3.48	1.469
DEP6. I feel sad when I cannot achieve an appearance similar to the one shown on social networks.	3.82	1.535	3.50	1.544