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CYBERBULLYING AMONG ADOLESCENTS AND ONLINE INFORMATION SEEKING ABOUT MENTAL HEALTH

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Summary:

Background*: Cyberbullying is a serious problem among adolescents and has an impact on mental health. The purpose of this study was to: 1) translate and validate the Cyberbullying and Online Aggression Survey in the Serbian language; 2) explore factors associated with more intense cyber victimization and cyber offending and 3) examine whether more intense cyber victimization and cyber offending are associated with a higher likelihood of online search for topics on mental health in a sample of high school students.*

Subjects and Methods*: A total of 702 students from 4 public high schools participated in this cross-sectional study. Data were collected using a general questionnaire and the Cyberbullying and Online Aggression Survey. Internal consistency of the questionnaire was examined and confirmatory factor analysis was conducted to assess construct validity. The multiple linear regression model examined factors associated with higher levels of cyber offending and cyber victimization. The multiple logistic regression models examined whether cyber offending and cyber victimizations were associated with searching for mental health topics on the Internet.*

Results*: Cronbach's alpha for the Cyberbullying Victimization Scale was 0.813 and for the Cyberbullying Offending Scale was 0.789. Both scales had a one-factorial structure and parameters on the confirmatory factor analysis were appropriate. More than one-half of students (56.2%) reported ever being cyber victimized and 39.9% of students reported ever being cyber offenders. Having lower grades, being younger at first Internet use and more frequent use of the internet were associated with both higher Cyberbullying Victimization and Offending scores. Having higher scores on both Cyberbullying Victimization and Offending scales was associated with higher odds of searching for mental health topics online.*

Conclusion*: It is necessary to address cyberbullying in schools to help recognize and modify the behavior of cyber offenders and provide means of support and empowerment to cyber victims.*

Keywords*: cyber, victims, offenders, adolescents, high school, mental health.*

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INTRODUCTION

Cyberbullying has been identified as aggression using digital devices in which the goal is to harm another person and cause emotional distress (Mitchell & Jones 2015; Krešić Ćorić & Kaštelan 2020). While aggression is often perceived as one-time episode, bullying has a tendency to repeat over time (Kopecký & Szotkowski 2017). The estimated prevalence of cyber offending ranged from 1% to 41% and cyber victimization ranged from 3% to 72% (Selkie et al. 2016). Over the past decade, cyberbullying has been on the rise, particularly among the girls (Kessel Schneider et al. 2015). However, worldwide studies suggest that gender differences in cyber victimization and offending might not be as evident (Sharma et al. 2017; Uludasdemir & Kucuk 2019; Coelho et al. 2016).

In Serbia, efforts have been made to raise awareness about cyberbullying. Numerous trainings, lectures, seminars and workshops for both adults and children have been conducted nationwide (Rančić 2018) along with several cross-sectional studies on cyberbullying in elementary schools (Popović-Ćitić et al. 2011; Baic et al. 2017) and elementary and high schools combined (Popadić & Kuzmanović 2013; Popadić et al. 2016). Based on a large, nationwide study on cyberbullying experiences (Popadić & Kuzmanović 2013), the Ministry of Education, Science and Technological Development together with the UNICEF supported the release of a handbook on prevention of cyberbullying in Serbia (Digitalno nasilje-prevencija i reagovanje 2016) targeting students, teachers, parents and professionals who focus on child protection.

While previous studies in Serbian language provided important evidence about cyberbullying experiences, none of the studies applied a questionnaire which has previously been assessed for internal consistency and construct validity. In addition, most of the studies have only used descriptive statistics and not regression models to evaluate factors associated with cyber victimization and cyber offending (Popović-Ćitić et al. 2011; Baic et al. 2017; Popadić et al. 2016). Finally, none of the studies

(Popović-Ćitić et al. 2011; Baic et al. 2017; Popadić & Kuzmanović 2013; Popadić et al. 2016) examined the association of cyber- victimization and offending experiences with indicators of mental health.

Internet has become a major source of health-related information for adolescents (Park & Kwon 2018). In fact, sexually transmitted infections (STIs) and mental health are typically those health topics which adolescents seek online instead of talking to a physician (Gazibara et al. 2020). This may be due to the fact that mental health problems among adolescents are frequently being stigmatized (DuPont-Reyes et al. 2020). However, little is known whether adolescents who experience cyberbullying more often browse the Internet in search of mental health topics.

We hypothesized that cyberbullying is burdensome for teenagers and that they more often search for mental health information online, which may be a proxy for looking for help in dealing with cyberbullying. The purpose of this study was to: 1) translate and validate the Cyberbullying and Online Aggression Survey in Serbian language; 2) examine factors associated with more intense cyber victimization and cyber offending and 3) examine whether more intense cyber victimization and cyber offending are associated with higher likelihood of online search for topics on mental health in a sample of high school students.

SUBJECTS AND METHODS

A cross-sectional study was carried out in the population of adolescents. Study participants were recruited from high schools in the capital city of Belgrade, Serbia. Secondary education in the Republic of Serbia is organized through high schools, vocational secondary schools and secondary art schools. To enter high schools, successful candidates must pass entrance exam: one in mathematics and one in Serbian language. Upon enrollment, students choose either Science-mathematics or Humanities-languages program after which they most commonly opt to enter higher education institutions, typically at age 19.

We randomly selected four out of 21 public high schools in the Belgrade metropolitan area. We included only public high schools because students from diverse socio-economic and educational backgrounds would be represented in the study sample. The inclusion criteria were: being enrolled in a public high school, being present in the classroom on the day of the survey and understanding the Serbian language enough to read and respond to the questionnaire. The exclusion criteria were refusal to participate and not fulfilling the inclusion criteria. Roughly 93% of the eligible participants were present at school at the time of the survey. All students who received the questionnaire agreed to fill it in (response rate 100%).

Procedures

We selected 4 high schools by drawing slips of paper with names of all 21 high schools in Belgrade from a non-transparent container. Right after determining the target high schools, the research team contacted the school principals by telephone to explain the details of the study. Following the telephone call, the research team submitted the questionnaires and information sheet for parents via the official email to school principals for inspection. Several weeks after, the school leadership contacted the principal investigator of the study (TG) and arranged the time at which the research team would be allowed to enter the school to conduct the survey.

As the size of 4 high schools was not the same (there were two schools with 14 classrooms and 2 schools with 16 classrooms), the research team decided again to draw paper slips with the number of classrooms from a bag. In this way, 7 classrooms were chosen in smaller schools and 8 classrooms were chosen from larger schools. One person from the research team of 3 people entered the classroom simultaneously at the beginning of the class. The person in charge of the classroom explained the study in front of the class and distributed the questionnaires. The questionnaires were filled using pen and paper. The procedures took around 10-15 minutes. After all participants had handed over the filled questionnaires to the person in charge, the research team convened in the common room at school to wait for the beginning of the next class until all the chosen classrooms were checked. Responses from the paper questionnaires were entered manually into the database.

Ethical approval for the study was obtained from the Institutional Review Board of the Faculty of Medicine, University of Belgrade. The schools in which we conducted this study informed the parents in an opt-out manner i.e. the parents were informed about the survey and were asked to notify the school if they did not want their children to take part in this research. Participation was voluntary.

Instruments

The study was conducted during December 2016 and January 2017. Data were collected by an anonymous questionnaire before the start of classes (Appendices 1 and 2). First, the questionnaire examined socio-demographic characteristics of the participants (gender, age, study year, type of high school program [science-mathematics vs. humanities-languages] and grade point average (GPA), parental marital status and education level, household monthly income and having siblings).

The Internet use was examined by the question "Do you use the Internet?" (yes/no). Next, the device to access the Internet was examined by the question "Which device do you most often use to access the Internet?" (personal computer/laptop/tablet/telephone/other). Students were asked to write the youngest age at which they started using the Internet. Finally, the question "How often do you use the Internet?" (several times per day/once a day/several times per week/once per week/I rarely use the Internet) examined the frequency of Internet use. In the initial analysis, we identified that the device through which the participants accessed the Internet was not relevant to the study outcomes. For this reason, we have omitted those data from the final analysis (Appendix 1).

Participants were asked about mental health as a topic of interest for online search were included in this analysis as a potential indicator of increased need for mental health support among students who experience cyber victimization or cyber offending.

Experiences with cyberbullying were tested using the Cyberbullying and Online Aggression Survey (Patchin & Hinduja, 2006; Hinduja & Patchin, 2009) (Appendix 2). The Cyberbullying and Online Aggression Survey was composed of 38 items divided into several segments. The first segment of the Survey, comprised the Cyberbullying Victimization Scale items (items no. #1 – #6 and #9 – #11). The range of answers was scored from never=0 to every day=4 (score range 0-36, where higher scores denoted more involvement with cyberbullying as victims)

The second segment of the Survey comprised the Cyberbullying Offending Scale. The range of answers was scored from never=0 to every day=4 (score range 0-20, where higher scores represented more intensive involvement in cyber offending) (Patchin & Hinduja 2006; Hinduja & Patchin 2009).In the third segment, students were asked about their past cyberbullying experiences. The final segment of the Survey explored students' feelings about cyberbullying.

Approval for the translation and use of the Cyberbullying and Online Aggression Survey in Serbian language was obtained from the authors (Patchin & Hinduja, 2006; Hinduja & Patchin, 2009). The Survey was translated using the standard methodology for translation and cultural adaptation of questionnaires. Minor adjustments were made. Based on the current state of affairs in the digital realm, certain terms had to be modified to match the contemporary vernacular for Internet platforms. For item #1 "chat room" was modified to "group chat". In item #4 "My Space" was modified to "Facebook wall". Similarly, in item #6, "instant message" was modified to "private message". Item #17, MySpace, Xanga, or Friendster page were changed to "social networks" To test the understanding and interpretation of the Serbian Cyberbullying and Online Aggression Survey, we administered the questionnaire to 10 high school students, who confirmed the clarity and face validity of the questionnaire. No specific remarks were observed regarding the terminology used and comprehension of terms and sentences. The research team concluded that the translated questionnaire was clear and ready for distribution.

Statistical analyses

The internal consistency of the Survey in Serbian language was tested using the Cronbach's alpha and McDonald's omega coefficients. To assess whether our data were suitable for the exploratory factor analysis we used the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett test of sphericity. The construct validity was tested using the Exploratory Factor Analysis (EFA) with Varimax rotation. The confirmatory Factor Analysis (CFA) was used to examine the fit of the items according to domains in the original scales.

The differences in continuous variables were tested by the Student's t-test. Prior to performing the regression analyses, all potentially relevant variables collected by the questionnaire and based on the reports from literature that might be associated with cyberbullying were examined using a directed acyclic graph (DAG). Based on our DAG (figure not shown), we excluded "having siblings" from the regression models, as it was not associated neither with the exposure not with the outcome.

To assess socio-demographic factors associated with higher scores in Cyberbullying Victimization and Offending Scales we conducted two hierarchical linear regression analyses. The dependent variable (outcome) in the first model was the total Cyberbullying Victimization and in second Cyberbullying Offending scores (both as continuous scores). The independent variables were classified according to the following models: Basic model included gender and age; in School model, high school program and GPA were added to the variables in Basic model; Socio-demographic model included previous

variables and parental marital status, parental education level and household monthly income; Finally, the Full model included all previous variables as well as age at first internet use and frequency of internet use.

To examine whether cyberbullying was associated with search for mental health topics online, we tested the continuous Cyberbullying Victimization and Offending scores in a logistic regression model. The scores were entered as the independent variables and the dependent variable was self-reported search on mental health topics (yes/no). This model was adjusted for all the covariates described in the aforementioned Full model of the hierarchical linear regression analysis. Analyses were performed in SPSS 20.0 (Chicago, IL, U.S.A.) and JASP version 0.10.2 (http:/www.jasp-stats.org/).

Table 1 Socio-demographic characteristics of the study sample (N=702)

Variable		Count	%
Gender	Male	294	41.9
	Female	408	58.1
Age in years ± SD (range)		16.5±1.2 (14-19)	
Age groups	14-15	188	26.8
	16-17	317	45.2
	18-19	197	28.1
Type of high school program	Science-mathematics	391	55.7
	Humanities-languages	311	44.3
Grade point average *		4.4±0.5 (2.12-5.0)	
Parental marital status	Married	568	80.9
	Divorced	93	13.2
	Other	41	5.8
Highest education attainment of the mothers	Primary	5	0.7
	Secondary	172	24.5
	University	525	74.8
Highest education attainment of the fathers	Primary	5	0.7
	Secondary	171	24.4
	University	526	74.9
Household monthly income (Euros)	< 405	62	8.8
	405-810	309	44.0
	>810	331	47.2
Age at first internet use in years ± SD (range)		9.2±2.4 (2-17)	
Frequency of internet use	Several times per week	12	1.7
	Once a day	8	1.1
	Several times per day	682	97.2
Having siblings	No	136	19.4
	Yes	566	80.6
Ever being cyber offender	No	418	60.1
	Yes	277	39.9
	Missing	7	1.0
Being cyber offender in past 30 days	No	574	82.9
	Yes	118	17.1
	Missing	10	1.4
Ever being cyber victim	No	302	43.8
	Yes	388	56.2
	Missing	12	1.7
Being cyber victim in past 30 days	No	496	76.1
	Yes	156	23.9
	Missing	50	7.1
Searching for mental health topics	Yes	165	23.5
	No	537	76.5

Legend: SD-standard deviation; *maximum range of passing grade 2.0-5.0

RESULTS

Cronbach's alpha for the Cyberbullying Victimization Scale was 0.813. McDonald's omega for the total scale was 0.819. Sampling adequacy as measured by the KMO was 0.866. Bartlett's test of sphericity showed the probability level of p=0.001. On EFA, there was only one factor for the total scale. This factor explained a total of 52.5% variance. Cronbach's alpha for the Cyberbullying Offending Scale was 0.789. McDonald's omega for the total scale was 0.822. According to KMO, sampling adequacy was appropriate (0.818). Probability level of Bartlett's test of sphericity was p=0.001. On EFA we observed one factor that explained 58.2% of variance. One-factorial structure for 9-item Cyberbullying Victimization Scale and 5-item Cyberbullying Offending Scale showed a model with an

Table 2 Average scores on cyberbullying victimization and offending scales for all students and according to gender

Statements	All N=702 mean (SD)	Males N=294 mean (SD)	Females N=408 mean (SD)	p for difference between genders
Cyberbullying Victimization Scale				
1. In the last 30 days, have you been made fun of in a group chat?	0.6 (1.0)	0.7 (1.1)	0.8 (1.0)	0.272
2. In the last 30 days, have you received an email from someone you know that made you really mad?	0.3 (0.7)	0.2 (0.6)	0.3 (0.8)	**0.039**
3. In the last 30 days, have you received an email from someone you didn't know that made you really mad?	0.1 (0.6)	0.2 (0.7)	0.1 (0.5)	0.616
4. In the last 30 days, has someone posted something on your Facebook wall that made you upset or uncomfortable?	0.4 (0.7)	0.4 (0.8)	0.4 (0.7)	0.572
5. In the last 30 days, has someone posted something on another web page that made you upset or uncomfortable?	0.4 (0.8)	0.4 (0.8)	0.5 (0.8)	0.388
6. In the last 30 days, have you received a private message that made you upset or uncomfortable?	0.7 (1.0)	0.7 (1.0)	0.7 (1.0)	0.430
7. In the last 30 days, have you been bullied or picked on by another person while online?	0.4 (0.8)	0.4 (0.9)	0.4 (0.8)	0.723
8. In the last 30 days, have you been afraid to go on the computer?	0.2 (0.7)	0.2 (0.7)	0.2 (0.6)	0.834
9. In the last 30 days, has anyone posted anything about you online that you didn't want others to see?	0.4 (0.7)	0.4 (0.8q)	0.4 (0.7)	0.882
Cyberbullying Victimization Score	3.6 (4.8)	3.6 (4.9)	3.7 (4.7)	0.895
Cyberbullying Offending Scale				
1. In the last 30 days, have you posted something online about someone else to make others laugh?	0.6 (1.0)	0.8 (1.1)	0.5 (0.9)	**0.001**
2. In the last 30 days, have you sent someone a computer text message to make them angry or to make fun of them?	0.5 (1.0)	0.7 (1.1)	0.4 (0.9)	**0.001**
3. In the last 30 days, have you sent someone an email to make them angry or to make fun of them?	0.2 (0.6)	0.2 (0.7)	0.1 (0.6)	0.833
4. In the last 30 days, have you posted something on someone's social network profile to make them angry or to make fun of them?	0.2 (0.7)	0.2 (0.7)	0.2 (0.7)	0.229
5. In the last 30 days, have you taken a picture of someone and posted it online without their permission?	0.5 (1.1)	0.5 (1.1)	0.5 (1.1)	0.551
Cyberbullying Offending Score	2.0 (3.4)	2.4 (3.5)	1.8 (3.3)	**0.001**

Legend: never-0; once or twice-1; a few times-2; many times-3; every day-4; SD-standard deviation; The differences were tested using the t-test

acceptable fit for our study sample, confirming the original construct of the scales (figures not shown).

Study sample comprised 702 high school students. Characteristics of the study participants and their experiences with cyberbullying are shown in Table 1. More than half of students (56.2%) reported ever being cyber victimized and 39.9% of students reported ever being cyber offenders. In past 30 days, reported frequency of cyber victimization was 23.9% and of cyber offending 17.1% (Table 1).

The average victimization score was 3.7± 4.8 out of 36. Girls were more frequently receiving emails 'from someone who they knew that made them really mad' compared to boys. Most common cyber victimization experiences for both genders in our sample of high school students were: receiving upsetting or uncomfortable private message and being made fun of in group chat (Table 2). The distribution of types of cyber offenders is presented in Figure 1.

Most students knew the identity of person who was bullying them online (Figure 1). Responses to ever being cyber bullied were: blocking the bully (29.1%), doing nothing (14.2%), doing something else (6.4%), leaving the website (3.9%), change of screen name or email (3.1%) and logging off computer (2.3%).

The average Offender score was 2.0 ± 3.3 out of 20. This score was higher among boys compared to girls. Compared to girls, boys were posting and sending text messages more often (Table 2).

The distribution of motives for cyber offending is shown in Figure 2.

More than one-half of students reported that having fun was the reason for cyber offending (Figure 2). The majority of students (83.0%) have not reported their cyber victimization experience to anyone. Most common feelings to cyber victimization were being angry (69.8%) and frustrated (65.2%). All negative feelings relative to cyberbullying experience (being sad, scared, frustrated, embarrassed, angry) were correlated with a higher Cyberbullying Victimization Score.

Lying online about one's age correlated with being male (ρ=0.184. p=0.010), however, no correlation with study year was observed (ρ=-0.064, p=0.093). Lower GPA correlated with more frequent making fun of others in group chats (ρ=-0.014, p=0.003). Lower GPA also correlated with posting on social media to make other people angry or to make fun of them (ρ=-0.077, p=0.044). This correlation was not observed with regards to gender (ρ=0.046, p=0.229) or age (ρ=0.042, p=0.267).

In Basic model, we observed that being older was associated with higher Cyberbullying Victimization score (Table 3). This association was lost after adjustment for other school-related and socio-demographic variables. Having lower GPA remained consistently associated with higher Cyberbullying Victimization score throughout three models. Full model showed that being older, having lower GPA, being younger at first internet use and more

Figure 1: Distribution of reported cyber offenders

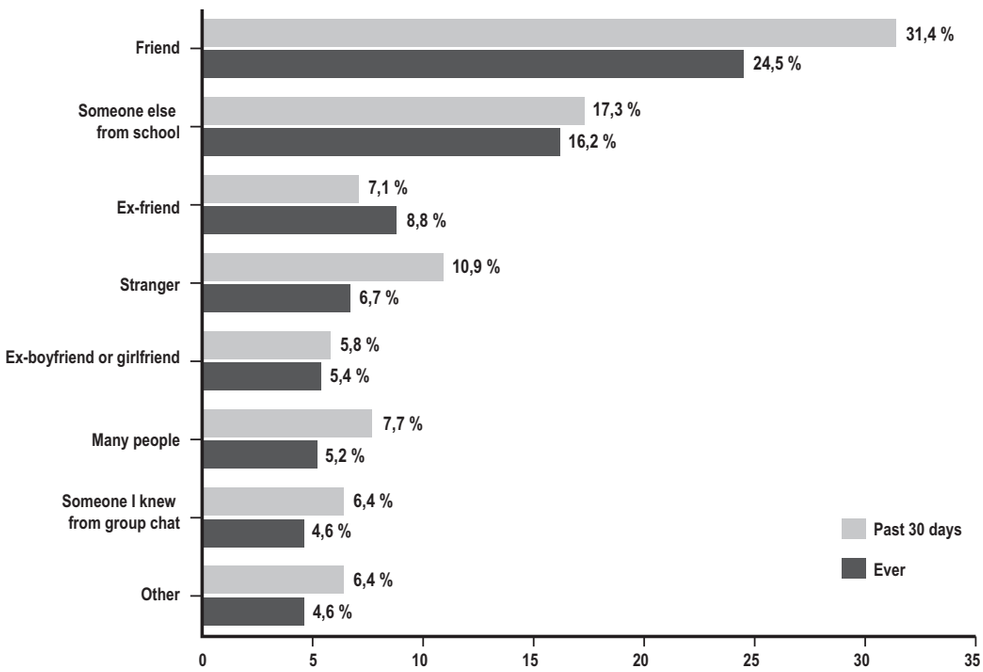

Figure 2: Distribution of motives for cyber offending

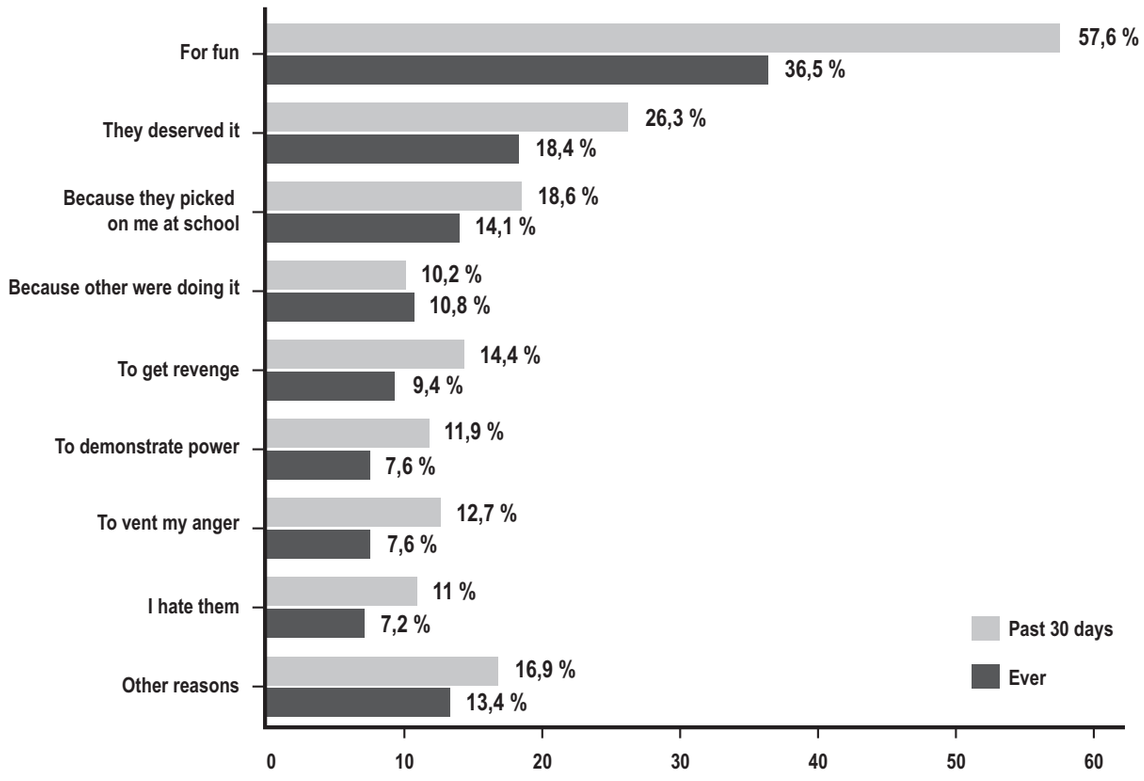

Table 3 Factors associated with higher Cyberbullying Victimization score among high school students in Belgrade, Serbia

Variable	Basic model		School model		Socio-demographic model		Full model	
	B (95%CI)	p	B (95%CI)	p	B (95%CI)	p	B (95%CI)	p
Gender Female vs. male	-0.12 (-0.84, 0.60)	0.746	-0.28 (-1.01, 0.44)	0.443	-0.20 (-.939, .535)	0.591	-0.44 (-1.17, 0.29)	0.239
Age	0.31 (0.02, 0.59)	0.036	0.15 (-0.15, 0.45)	0.321	0.16 (-0.14, 0.46)	0.289	0.31 (0.01, 0.61)	0.046
Type of school program Science-mathematics vs. Humanities-languages			0.27 (-0.44, 0.99)	0.449	0.26 (-0.46, 0.96)	0.477	-0.02 (-0.73, 0.68)	0.950
Grade point average			-1.10 (-1.78, -0.42)	0.002	-1.04 (-1.74, -0.35)	0.003	-0.82 (-1.50, -0.14)	0.018
Parental marital status Married vs. other					-0.79 (-1.70, 0.12)	0.089	-0.66 (-1.55, 0.23)	0.145
Mother's education Primary and Secondary vs. University					0.08 (-0.81, 0.97)	0.861	0.19 (-0.68, 1.06)	0.669
Father's education Primary and Secondary vs. University					-0.16 (-1.02, 0.69)	0.710	-0.02 (-0.86, 0.82)	0.962
Household monthly income					-0.01 (-0.58, 0.57)	0.987	-0.02 (-0.59, 0.55)	0.935
Age at first internet use							-0.25 (-0.39, -0.10)	0.001
Frequency of internet use							-2.48 (-3.39, -1.58)	0.001
R^2	0.006		0.021		0.026		0.077	
Sig. change in F	0.109		0.005		0.538		0.001	

B – unstandardized coefficient; CI – Confidence interval; p – probability level; The models represents the linear regression where the dependent variable was the Cyberbullying Victimization score

Table 4 Factors associated with higher Cyber Offending score among high school students in Belgrade, Serbia

Variable	Basic model		School model		Socio-demographic model		Full model	
	B (95%CI)	p	B (95%CI)	p	B (95%CI)	p	B (95%CI)	p
Gender Female vs. male	0.55 (0.05, 1.06)	0.033	0.45 (-0.06, 0.96)	0.086	0.44 (-0.07, 0.96)	0.092	0.24 (-0.27, 0.75)	0.358
Age	0.08 (-0.13, 0.28)	0.456	-0.07 (-0.28, 0.14)	0.500	-0.08 (-0.29, 0.14)	0.483	0.04 (-0.17, 0.25)	0.705
Type of school program Science-mathematics vs. Humanities-languages			0.71 (0.21, 1.21)	0.005	0.69 (0.19, 1.19)	0.007	0.53 (0.03, 1.02)	0.038
Grade point average			-1.04 (-1.52, -0.56)	0.001	-1.08 (-1.57, -0.60)	0.000	-0.97 (-1.45, 0.49)	0.001
Parental marital status Married vs. other					-0.05 (-0.68, 0.59)	0.886	0.04 (-0.59, 0.66)	0.909
Mother's education Primary and Secondary vs. University					0.43 (-0.20, 1.05)	0.179	0.43 (-0.18, 1.05)	0.165
Father's education Primary and Secondary vs. University					-0.01 (-0.61, 0.59)	0.970	0.01 (-0.58, 0.60)	0.964
Household monthly income					-0.03 (-0.44, 0.37)	0.872	-0.11 (-0.51, 0.29)	0.594
Age at first internet use							-0.23 (-0.34, -0.13)	0.001
Frequency of internet use							-0.93 (-1.57, -0.29)	0.004
R^2	0.007		0.044		0.047		0.082	
Sig. change in F	0.072		0.001		0.698		0.001	

B – unstandardized coefficient CI – Confidence interval; p – probability level; The models represents the linear regression where the dependent variable was the Cyberbullying Offending score

Table 5 Association of higher Cyberbullying Victimization score and Cyberbullying Offending score with interest in mental health topics on the internet

Variable	Cyberbullying Victimization			Cyberbullying Offending		
	OR	95% CI	p	OR	95% CI	p
Cyberbullying score	1.04	1.01 – 1.07	0.040	1.05	1.01 – 1.11	0.042
Gender Male vs. Female	0.91	0.62 – 1.32	0.623	0.88	0.61 – 1.29	0.516
Age	0.93	0.80 – 1.09	0.394	0.94	0.819 – 1.10	0.479
Type of school program Science-mathematics vs. Humanities-languages	1.26	0.88 – 1.81	0.202	1.22	0.85 – 1.75	0.273
Grade point average	0.65	0.46 – 0.91	0.013	0.66	0.47 – .94	0.019
Parental marital status Married vs. other	1.05	0.67 – 1.66	0.822	1.03	0.65 – 1.62	0.913
Mother's education Primary and Secondary vs. University	0.98	0.63 – 1.53	0.925	0.96	0.61 – 1.50	0.864
Father's education Primary and Secondary vs. University	1.01	0.65 – 1.55	0.974	1.01	0.65 – 1.55	0.978
Household monthly income	1.19	0.88 – 1.60	0.257	1.19	0.89 – 1.61	0.244
Age at first internet use	1.06	0.98 – 1.15	0.143	1.06	0.98 – 1.15	0.123
Frequency of internet use	1.19	0.74 – 1.90	0.474	1.13	0.71 – 1.793	0.605

Legend: OR-odds ratio; CI-confidence interval. The models represents the binary logistic regression where the dependent variable was seeking information about mental health on the Internet.

frequent use of internet were associated with being cyber victimized more often (Table 3).

When Cyberbulling Offending score was observed as an outcome, in Basic model, females were more likely to be cyber offenders (Table 4). This association was lost after inclusion of other variables. Full model showed that having lower GPA, attending the Humanities-languages program at school, being younger at first internet use and more frequent use of internet were associated with higher likelihood of being more often cyber offender (Table 4). Fully adjusted logistic regression models showed that having higher scores on both. Cyberbullying Victimization and Offending scales was associated with higher odds of searching for mental health topics online in our sample of high school students (Table 5).

DISCUSSION

This study found that the Serbian version of Cyberbullying Victimization and Offending Scales pertaining to the Cyberbullying and Online Aggression Survey mirrored one-factorial structure of the original scales in the English language. In addition, internal consistency as measured by both Cronbach's alpha and McDonald's omega coefficients was deemed adequate. Factors associated with more severe cyber victimization and cyber offending overlap to a certain extent. Specifically, having a lower GPA, being younger at first internet use and more frequent use of the Internet were associated with higher Cyberbullying Victimization and Offending scores. Additionally, being older was associated with more frequent cyber victimization, while attending the Humanities-languages program was associated with more frequent cyber offending. Finally, both students who reported higher Cyberbullying Victimization and Offending scores were more likely to search the internet for mental health topics.

In the evaluation of psychometric properties of a questionnaire, acceptable values of the internal consistency as measured by the Cronbach's alpha and McDonald's omega coefficients indicate that items in the scale measure the same element and are part of a cohesive construct. While alpha coefficient is the most widely used measure in questionnaire metrics, it has been argued that omega coefficient represents better the internal consistency of a scale, because it considers the strength of the association between the scale items and variation of covariances (Dunn et al. 2014). In this study, both measures to assess the internal consistency of the Cyberbullying Victimization and Offending Scales were used. We observed that both scales had coefficient values above the arbitrary cut-off of >0.7. The levels of both coefficients were comparable to those reported previously in an adolescent sample in Ireland (Foody et al. 2019) and Crobanch's alpha coefficient was similar to the one reported in a sample of students aged 11 to 18 years from Slovakia (Hollá et al. 2017).

One-factorial structure was confirmed by observing the parameters on CFA for both scales. All the parameters had desired values for an optimum fit, except root mean square error of approximation – RMSEA – which was deemed acceptable. These findings suggested that each scale is compact and does not have potential underlying domains. A similar construct of the scales was also observed in an adolescent population in Slovakia (Hollá et al. 2017). Our results show that the Cyberbullying Victimization and Offending Scales in Serbian language mirror the original structure of the scales (Hinduja & Patchin 2006; Hinduja & Patchin 2009).

The prevalence of ever cyber victimization among high school students observed in this study (56.2%) is somewhat lower compared to the prevalence of 66% found in the nationwide study on cyberbullying in Serbia (Popadić & Kuzmanović 2013). The scores on the Cyberbullying Victimization and Offending Scales were clustered in the lower end of the two scales, suggesting that a vast majority of students in our sample did not experience frequent cyber victimization or offending. A similar pattern was observed in a Slovakian adolescent sample (Hollá et al. 2017). Compared to our findings, the scores on Cyberbullying Victimization and Offending Scales were markedly higher in a sample of high school students from India (Mohammad et al. 2017).

In terms of gender, we observed that females in our sample were more frequently receiving disturbing emails, while males were overall more frequent cyber offenders. These results are in line with patterns of cyberbullying among middle school students in Serbia (Popović-Ćitić et al. 2011) as well as worldwide (Tural Hesapcioglu & Ercan 2017; Lindfors et al. 2012). Most participants in our study were familiar with their cyber offenders, as one in six study participants reported that their friends were cyber offenders. In other high school populations, such as in Greece, cyber victims usually did not know personally the offender (Gkiomisi et al. 2017). Some researchers suggested that cyber victims remain in contact with their cyber offenders as a means of coping, because they want to be in contact with other people on social media and their contact even with the cyber offender may be a way of compensation for lack of meaningful relationships with other peers (Khatcherian & Zdanowicz 2018).

Our findings highlight the need for promotion and encouragement of adolescents to foster healthy relationships with peers. This also includes cultivation of empathy (Ang & Goh 2010), and improvement of emotional

skills that would allow for a better communication between peers and well-being (Schoeps et al. 2018).

We identified that socio-demographic factors associated with higher cyber victimization and cyber offending scores in our sample of high school students were, to some extent, similar. Specifically, students who had lower GPA and accessed internet at earlier age were more likely to report higher cyber victimization and offending scores. Having low school achievements could indicate that students pay more attention to other activities, such as spending prolonged hours online instead of doing school work or other activities not related to school. Online gaming, exposure to violence (Shin & Ahn 2015; Chang et al. 2015) or overall extensive time spent online (Twyman et al. 2010) could, in turn, increase the chances of becoming involved in cyberbullying either as an offender, victim or both. On the other hand, lower grades could as well result from other disturbances in students' lives, such as being cyber victimized, not having adequate social support or having mental health issues related to (cyber)bullying (Wright 2018).

Previous research supported the notion that adolescents who were either cyber victims or cyber offenders had lower grades at school (Kowalski & Limber 2013). However, it is unclear whether or not poor academic performance increases the likelihood of cyberbullying or stems from participation in cyberbullying (Wright 2018; Kowalski & Limber 2013). In line with the previous evidence (Shin & Ahn 2015; Chang et al. 2015; Twyman et al. 2010), being younger at first internet use could indicate greater technological versatility and exposure to various online contents, which results from prolonged time spent online. It is possible that long hours online lead to a greater propensity to engage in risky behaviors in adolescence, which in turn, increase the likelihood of being cyber victimized (Sasson & Mesch 2017). To help reduce potential involvement in cyberbullying, it could be beneficial to limit adolescents' time spent on digital devices and support engagement in other activities in their free time.

Students in the Humanities-languages program were more likely to be cyber offenders compared to adolescents in Science-mathematics program. In a sample of Indian high school students, Mohammad et al. (2017) found higher cyber victimization and cyber offending scores among students in science compared to students in art. This finding is quite intriguing. The division of programs in Serbian high schools was based upon two distinctive fields. Students customarily choose one particular program relative to their affinity and further education plans beyond high school. After graduation, students of Humanities-languages program commonly pursue careers in law and politics, philosophy and related sciences or languages. In efforts to prevent cyberbullying, school climate plays an important role (Veiga Simão et al. 2017). This means that the students should have confidence in their teachers to provide support and guidance, because often students ask for help from their peer or parents (Veiga Simão et al. 2017). Students in schools that foster safe school environment are less likely to experience cyberbullying (Låftman, Östberg, & Modin 2017; Bevilacqua et al. 2017).

We observed that students who were cyber victims and cyber offenders had a tendency to search the Internet for mental health topics. This finding could be interpreted as an indicator of the mental health needs of students who experience cyberbullying. A systematic review of the influence of cyberbullying on mental health in adolescents suggested that students who experienced cyberbullying are at risk of poorer mental health worldwide (Bottino et al. 2015). In Sweden, involvement in bullying, including cyberbullying, was associated with having depressive symptoms and psychosomatic symptoms (Landstedt & Persson 2014). In Norway and England, adolescents who were cyberbullied reported lower life satisfaction and well-being compared to those students who were not cyberbullied (Arnarsson et al. 2019; Przybylski & Bowes 2017).

Because the involvement in cyberbullying has such a profound negative effect on adolescents' mental health, the campaigns to raise awareness about cyberbullying and response to cyberbullying in Serbia should continue (Popadić & Kuzmanović 2013; Digitalno nasilje-prevencija i reagovanje 2016). The role of parents should also be highlighted and cyberbullying should be discussed in parental meetings in school. Because the handbook on prevention of cyberbullying in Serbia (Digitalno nasilje-prevencija i reagovanje 2016) addresses various pertinent issues about cyberbullying, a printed copy of the handbook should be distributed in parental meetings in school. When the issues of cyberbullying and mental health are discussed publicly and more often, they could support more students to come forward to tackle their mental health difficulties and needs.

STUDY LIMITATIONS

We have not used other questionnaires or measures (such as personality traits) to assess the concurrent and convergent validity of the Cyberbullying and Online Aggression Survey. Also, we did not include time spent online per day. Our study sample of adolescents in high schools comes from the largest urban area in the country. It is possible that adolescents who live in smaller cities and towns or rural areas have less access to the Internet.

Similarly, adolescents who opt to go to high schools are more likely to continue their education in universities. Adolescents who study in vocational schools are more likely to enter the job market after completion of secondary education. In this study, we omitted adolescents from vocational schools, which could have affected the observed level of cyberbullying.

While we believe that our study sparked a keen interest among the participants, we have to acknowledge that the high response rate can be open to social acceptability bias, because the questionnaires were filled in the classrooms. While each student had their own working space to fill the questionnaires in, all classmates filled the questionnaires at the same time. Due to the time allocated to fill in the questionnaire during classes at school, it was not possible to include the information on previously diagnosed psychiatric illnesses, intake of psychotropic medications and psychoactive substance use in the questionnaire. For this reason, it was not possible to conduct a stratified analysis based on adolescents' mental health status. When calculating the rates of cyberbullying patterns, we observed a high rate of missing answers, particularly for items related to cyber victimization. For this reason, it is possible that the prevalence of cyberbullying patterns could have been higher. Due to the cross-sectional design, we were not able to infer unequivocally whether the examined socio-demographic variables were indeed associated with cyberbullying, because the inverse association may also be plausible.

FUTURE RESEARCH DIRECTIONS

When all the available research evidence is scrutinized, the strongest levels of the association between the exposure and the outcome within single studies are observed through randomized interventions. However, it would be ethically unacceptable to expose some participants to bullying to serve as the study group. Because of this, the strongest evidence is observed in prospective cohort studies. Therefore, the recommendation for future studies is to conduct longitudinal research whenever possible. On the other hand, the effects of prevention are best seen through cluster randomized trials. As there is an urgent need to prevent cyber violence in schools, prevention of cyberbullying and mental health promotion are imperative in this population group. For this reason, intervention research tailored for the specific schools systems and cultural formatting is warranted.

CONCLUSION

The Serbian version of Cyberbullying Victimization and Offending Scales is a valid instrument for assessment of cyberbullying. A high proportion of adolescents in Serbia are exposed to cyberbullying. Both cyber victims and cyber offenders sought after mental health topics online. Based on the analyzed socio-demographic characteristics associated with higher cyber victimization and cyber offending, it is necessary to address cyberbullying in schools and in the community to help recognize and modify behavior of cyber offenders and provide means of support and empowerment to cyber victims.

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References

1. *Ang RP & Goh DH: Cyberbullying among adolescents: the role of affective and cognitive empathy, and gender. Child Psychiatr Hum Develop 2010; 41:387-97.*
2. *Arnarsson A, Nygren J, Nyholm M, Torsheim T, Augustine L, Bjereld Y et al.: Cyberbullying and traditional bullying among Nordic adolescents and their impact on life satisfaction. Scand J Public Health 2020;48:502-10.*
3. *Baic V, Ivanovic Z, Simeunovic-Patic B: Distribution and characteristics of cyber violence among elementary school students – survey results in Serbia. J Psychol Educ Res 2017;25:93-101.*
4. *Bevilacqua L, Shackleton N, Hale D, Allen E, Bond L, Christie D et al.: The role of family and school-level factors in bullying and cyberbullying: a cross-sectional study. BMC Pediatrics 2017;17:160.*

5. *Bottino SM, Bottino CM, Regina CG, Correia AV, Ribeiro WS: Cyberbullying and adolescent mental health: systematic review. Cad Saude Publica 2015;31: 463-75.*
6. *Chang FC, Chiu CH, Miao NF, Chen PH, Lee CM, Huang TF et al.: Online gaming and risks predict cyberbullying perpetration and victimization in adolescents. Int J Public Health 2015;60:257-66.*
7. *Coelho V, Sousa V, Marchante M, Brás P, Romão A: Bullying and cyberbullying in Portugal: Validation of a questionnaire and analysis of prevalence. School Psychol Int 2016;73:223-39.*
8. *Ministarstvo prosvete, nauke i tehonološkog razvoja. UNICEF. Pedagoško društvo Srbije. Digitalno nasilje-prevencija i reagovanje. 2016; Available from: http://www.mpn.gov.rs/wp-content/uploads/2015/08/priručnik-interaktivni.pdf [in Serbian] (Last accessed September 20, 2020)*
9. *Dunn TJ, Baguley T, Brunsden V: From alpha to omega: a practical solution to the pervasive problem of internal consistency estimation. Br J Psychol 2014;105:399-412.*
10. *DuPont-Reyes MJ, Villatoro AP, Phelan JC, Painter K, Link BG: Adolescent views of mental illness stigma: An intersectional lens. Am J Orthopsychiatr 2020;90:201-11.*
11. *Foody M, McGuire L, Kuldas S, O'Higgins Norman J: Friendship Quality and Gender Differences in Association With Cyberbullying Involvement and Psychological Well-Being. Front Psychol 2019;10:1723.*
12. *Gazibara T, Cakic, J, Cakic M, Grgurevic A, Pekmezovic T: Searching for online health information instead of seeing a physician: a cross-sectional study among high school students in Belgrade, Serbia. Int J Public Health 2020;65(8):1269-78.*
13. *Gkiomisi A, Gkrizioti M, Gkiomisi A, Anastasilakis DA, Kardaras P: Cyberbullying Among Greek High School Adolescents. Indian J Pediatr 2017;84:364-8.*
14. *Hinduja S & Patchin JW: Bullying beyond the schoolyard: Preventing and responding to cyberbullying. Thousand Oaks, CA: Corwin Press; 2009.*
15. *Hollá K, Fenyvesiová L, Hanuliaková J: Measurement of Cyber-bullying severity. New Educ Rev 2017;47:29-38.*
16. *Kessel Schneider S, O'Donnell L, Smith E: Trends in Cyberbullying and School Bullying Victimization in a Regional Census of High School Students, 2006-2012. J School Health 2015;85:611-20.*
17. *Khatcherian E & Zdanowicz N: Why do cyberbullied adolescents stay in contact with their harasser? A Literature Review and Reflection on Cyberbullied Adolescents' Coping Strategies. Psychiatr Danub 2018;30(Suppl 7):537-40.*
18. *Kopecký K & Szotkowski R: Cyberbullying, cyber aggression and their impact on the victim –The teacher. Telemat Informat 2017;34:506-17.*
19. *Kowalski RM & Limber SP: Psychological, physical, and academic correlates of cyberbullying and traditional bullying. J Adolesc Healt 2013;53:S13-20.*
20. *Krešić Ćorić M & Kaštelan A: Bullying through the Internet – Cyberbullying. Psychiatr Danub 2020;32(Suppl 2):269-72.*
21. *Låftman SB, Östberg V, Modin B: School Leadership and Cyberbullying-A Multilevel Analysis. Int J Environ Res Public Health, 2017;14:1-11.*
22. *Landstedt E & Persson S: Bullying, cyberbullying, and mental health in young people. Scand J Public Health 2014;42(4):393-9.*
23. *Lindfors PL, Kaltiala-Heino R, Rimpelä AH: Cyberbullying among Finnish adolescents – a population-based study. BMC Public Health 2012;12:1027.*
24. *Mitchell KJ & Jones LM: Cyberbullying and bullying must be studied within a broader peer victimization framework. J Adolescent Health 2015;56:473-4.*
25. *Mohammad AW, Sankar R, Anicham J: Assessment of Cyber bullying and Emotional Stability among Higher Secondary Students. Biomed J Sci Tech Res 2017;1(1):178-83.*
26. *Patchin JW & Hinduja S: Bullies move beyond the schoolyard: A preliminary look at cyberbullying. Youth Violence Juv Just 2006;4:148-69.*
27. *Park E & Kwon M: Health-Related Internet Use by Children and Adolescents: Systematic Review. J Med Internet Res 2018;20:e120.*
28. *Popadić D & Kuzmanović D: Korišćenje digitalne tehnologije, rizici i zastupljenost digitalnog nasilja među učenicima u Srbiji. 2013; Available from: http://sbn.rs/clientpub/uploads/Digitalno%20nasilje-Izvestaj%202013.pdf [in Serbian] (Last accessed June 29, 2020)*
29 *Popadić D, Pavlović Z, Petrović D, Kuzmanović D: Global kids online Serbia: Balancing between Opportunities and Risks. Results from the Pilot Study. 2016; Available from: http://globalkidsonline.net/serbia-report/ (Last accessed June 29, 2020)*
30. *Popović-Ćitić B, Djurić S, Cvetković V: The prevalence of cyberbullying among adolescents: A case study of middle schools in Serbia. School Psychol Int 2011;32:412-24.*
31. *Przybylski AK & Bowes L: Cyberbullying and adolescent well-being in England: a population-based cross-sectional study. Lancet Child Adolesc Health 2017;1:19-26.*
32. *Rančić J: Vršnjačko nasilje na društvenim mrežama u Republici Srbiji. Commun Media 2018; 3:95-124. [in Serbian]*
33. *Sasson H & Mesch G: The Role of Parental Mediation and Peer Norms on the Likelihood of Cyberbullying. J Genet Psychol 2017;178:15-27.*
34. *Schoeps K, Villanueva L, Prado-Gascó VJ, Montoya-Castilla I: Development of Emotional Skills in Adolescents to Prevent Cyberbullying and Improve Subjective Well-Being. Front Psychol 2018;9:2050.*
35. *Selkie EM, Fales JL, Moreno MA: Cyberbullying Prevalence Among US Middle and High School-Aged Adolescents: A Systematic Review and Quality Assessment. J Adolesc Health 2016;58:125-33.*
36. *Sharma D, Kishore J, Sharma N, Duggal M: Aggression in schools: Cyberbullying and gender issues. Asian J Psychiatr 2017;29:142-5.*
37. *Shin N & Ahn H: Factors Affecting Adolescents' Involvement in Cyberbullying: What Divides the 20% from the 80%? Cyberpsychol Behav Soc Netw 2015;18: 393-9.*
38. *Tural Hesapcioglu S & Ercan F: Traditional and cyberbullying co-occurrence and its relationship to psychiatric symptoms. Pediatrics Int 2017;59:16-22.*
39. *Twyman K, Saylor C, Taylor LA, Comeaux C: Comparing children and adolescents engaged in cyberbullying to matched peers. Cyberpsychol Behav Soc Netw 2010;13:195-9.*
40. *Uludasdemir D & Kucuk S: Cyber Bullying Experiences of Adolescents and Parental Awareness: Turkish Example. J Pediatr Nurs 2019;44:e84-e90.*
41. *Veiga Simão AM, Ferreira PC, Freire I, Caetano AP, Martins MJ, Vieira C: Adolescent cybervictimization – Who they turn to and their perceived school climate. J Adolesc 2017;58:12-23.*
42. *Wright MF: Cyberstalking Victimization, Depression, and Academic Performance: The Role of Perceived Social Support from Parents. Cyberpsychol Behav Soc Netw 2018;21:110-6.*

APPENDIX 1

Questionnaire about online health information

This survey is anonymous. Please take the time to answer all the questions.

I USE OF INTERNET

1. Do you use the Internet?

☐ YES ☐ NO

2. Which device do you most often use to access the Internet:

1) personal computer
2) laptop
3) tablet
4) telephone
5) other

3. How often do you use Internet?

1) Several times per day
2) Once per day
3) Several times per week
4) Once a week
5) Rarely

4. What do you use the Interent for ?

1) to game
2) to study
3) to use social media
4) to listen to music
5) to search for health information
6) to search for various information

5. Do you search health-related websites?

☐ YES ☐ NO

6. Which of the following topics you most commonly search on the Internet:

1) fitness/exercies
2) nutrition/diet
3) sexually transmitted diseases
4) illicit substances
5) mental problems
6) intimate partner violence
7) malignant diseases
8) sex
9) cigarettes/tobacco
10) medications
11) bullying
12) domestic violence/abuse
13) other (please specify)

7. I search health-related websites (please encircle one answer for each question)

1)	instead of seeing a doctor	often	sometimes	rarely	never
2)	before I see a doctor	often	sometimes	rarely	never
3)	after I see a doctor	often	sometimes	rarely	never
4)	not related to doctor's visit	often	sometimes	rarely	never

8. Which Internet platforms do you visit when you search for health-related information:

1) Google
2) Websites run by physician's
3) Wikipedia
4) Health portals
5) health forums
6) social networks
7) websites run by health institutions
8) health blogs
9) Youtube
10) Other (specify)

9. To what degree do online health information influence your health-related decisions:

1) a lot
2) quite a bit
3) somewhat
4) a little
5) not at all

10. Please rank all the following sentences on a scale from 1 to 5:
1- strongly disagree; 2- disagree; 3 – I do not know; 4 – agree; 5) strongly agree

1)	I know what health resources are available on the Internet	1	2	3	4	5
2)	I know where to find helpful health resources on the Internet	1	2	3	4	5
3)	I know how to use the health information I find on the Internet to help me	1	2	3	4	5
4)	I know how to find helpful health resources on the Internet	1	2	3	4	5
5)	I have the skills I need to evaluate the health resources I find on the Internet	1	2	3	4	5
6)	I know how to use the Internet to answer my questions about health	1	2	3	4	5
7)	I can tell high quality health resources from low quality health resources on the Internet	1	2	3	4	5
8)	I feel confident in using information from the Internet to make health decisions	1	2	3	4	5

II USE OF SMARTPHONES

1. Do you use smartphone?

☐ YES ☐ NO

2. Do you use health and lifestyle apps?

☐ YES ☐ NO

3. If yes, what kind of apps do you use:

1) Fitness, running, step counter, calorie counter etc. (Runkeeper, Runtastic…)
2) Nutrition, diet, recipes (Hello fresh….)
3) Water intake (Water reminder….)
4) Tracking of menstrual cycle (Period Diary….)
5) Other (specify):

1. Your gender is

a) female b) male

2. Your age is _____ and school grade _____ in

a) science-maths b) humanities program

3. Last semester I had grade point average of _____

4. I use the Internet since the age of _____ years

5. My parents are:

a) married b) divorced c) other

6. My mother's education level is:

a) primary b) secondary c) college/University

7. My father's education level is:

a) primary b) secondary c) college/University

8. My mother is

a) employed b) unemployed c) other

9. My father is

a) employed b) unemployed c) other

10. Monthly income of my household is

a) <50.000 RSD b) 50.000-100.000 RSD c) >100.000 RSD

11. I have

a) younger sibling(s)
b) older sibling(s)
c) younger and older siblings
d) no siblings

APPENDIX 2

Cyberbullying and Online Aggression Survey

How often in the last 30 days have you experienced the following?:	Never	Once or twice	A few times	Many times	Every day
1. In the last 30 days, have you been made fun of in a chat room?	a	b	c	d	e
2. In the last 30 days, have you received an email from someone you know that made you really mad?	a	b	c	d	e
3. In the last 30 days, have you received an email from someone you didn't know that made you really mad? This does not include "spam" mail.	a	b	c	d	e
4. In the last 30 days, has someone posted something on your MySpace page that made you upset or uncomfortable?	a	b	c	d	e
5. In the last 30 days, has someone posted something on another web page that made you upset or uncomfortable?	a	b	c	d	e
6. In the last 30 days, have you received an instant message that made you upset or uncomfortable?	a	b	c	d	e
7. In the last 30 days, have your parents talked to you about being safe on the computer?	a	b	c	d	e
8. In the last 30 days, has a teacher talked to you about being safe on the computer?	a	b	c	d	e
9. In the last 30 days, have you been bullied or picked on by another person while online?	a	b	c	d	e
10. In the last 30 days, have you been afraid to go on the computer?	a	b	c	d	e
11. In the last 30 days, has anyone posted anything about you online that you didn't want others to see?	a	b	c	d	e
12. In the last 30 days, has anyone emailed or text messaged you and asked questions about sex that made you uncomfortable?	a	b	c	d	e
How often in the last 30 days have you done the following?	**Never**	**Once or twice**	**A few times**	**Many times**	**every day**
13. In the last 30 days, have you lied about your age while online?	a	b	c	d	e
14. In the last 30 days, have you posted something online about someone else to make others laugh?	a	b	c	d	e
15. In the last 30 days, have you sent someone a computer text	a	b	c	d	e
16. In the last 30 days, have you sent someone an email to make them angry or to make fun of them?	a	b	c	d	e
17. In the last 30 days, have you posted something on someone's MySpace,	a	b	c	d	e
18. In the last 30 days, have you taken a picture of someone and posted it online without their permission?	a	b	c	d	e

Cyber bullying **is when someone repeatedly makes fun of another person online or repeatedly picks on another person through email or text message or when someone posts something online about another person that they don't like.**

19. ***In my entire life,*** **I have cyberbullied others:**
a. never b. seldom c. sometime d. fairly often e. often f. very often

20. ***In the last 30 days,*** **I have cyberbullied others:**
a. never b. once or twice c. a few times d. many times e. every day

21. If so, what was the most important reason for cyberbulling that person?
a. to get revenge
b. they deserved it
c. because others were doing it
d. for fun
e. because they picked on me at school
f. to vent my anger
g. to demonstrate power
h. I hate them
i. other reasons
j. I have not cyberbullied another person in the last 30 days

22. ***In my entire life,*** **I have been cyberbullied:**
a. never b. seldom c. sometime d. fairly often e. often f. very often

23. ***In the last 30 days,*** **I have been cyberbullied:**
a. never b. once or twice c. a few times d. many times e. every day

If you have ever been cyberbullied, tell us about the most recent experience.

24. Did you know who it was who did this to you?
a. friend
b. someone else from school
c. ex-friend
d. ex-boyfriend or girlfriend
e. someone I knew from a chat room
f. stranger
g. many people
h. other
i. No one has ever cyberbullied me

25. Was the bully someone you have met in real life?
a. yes b. no c. don't know d. No one has ever cyberbullied me

How often in the last 30 days have you done the following?	Never	Once	Sometimes	Often	Many Times
26. Where you ever cyberbullied by another student at your school?	a	b	c	d	e
27. Where threats made online carried out at school?	a	b	c	d	e
28. Did you tell someone about the cyberbullying experience?	a	b	c	d	e
29. Did you tell your parents about the cyberbullying experience?	a	b	c	d	e
30. Did you tell a friend about the cyberbullying experience?	a	b	c	d	e

32. How did you respond to the cyberbullying experience?

a. logged off computer
b. blocked bully
c. changed screen name or email
d. left site
e. called the police
f. did nothing
g. did something else
h. No one has ever cyberbullied me

How did you feel about this cyberbullying experience?

NOTE: If you have not been cyberbullied, choose "f. N/A" which means not applicable.

How did you feel about this cyberbullying experience?	Never	Once	Sometimes	Often	Many Times	N/A
33. Where you sad?	a	b	c	d	e	f
34. Where you scared?	a	b	c	d	e	f
28. Where you frustrated?	a	b	c	d	e	f
29. Where you embarrassed?	a	b	c	d	e	f
30. Where you angry?	a	b	c	d	e	f
31. Where you not bothered by it?	a	b	c	d	e	f

Scoring Instructions

Points are assigned as follows:

Never = 0

Once or twice = 1 A

few times = 2 Many

times=3 Every day

= 4

Cyberbullying Victimization Scale: Items 1–6, 9–11

Cyberbullying Offending Scale: Items 14–18

Scale score created by summing item scores. Range of the victimization scale is 0–36; range of the offending scale is 0–20. Higher values represent more involvement with cyberbullying.

References

Patchin, J.W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice, 4,* 148–169.

Hinduja, S., & Patchin, J. W. (2009). *Bullying beyond the schoolyard: Preventing and responding to cyberbullying.* Thousand Oaks, CA: Corwin Press.

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