

ORIGINAL SCIENTIFIC PAPER

CYBERBULLYING AMONG ADOLESCENTS: CONSEQUENCES OF INAPPROPRIATE USE OF DIGITAL TECHNOLOGIES

RADOIČIĆ Danijela¹, STOJIC Vladislava², LUKIĆ Dragan³

¹Čuprija General Hospital, Miodraga Novakovića 78, Čuprija (SERBIA) ORCID 0009-0008-2123-3045

²The Faculty of Medical Sciences, University of Kragujevac, Svetozara Markovića 69, Kragujevac (SERBIA)
ORCID 0000-0002-9532-810X

³Faculty of education, Milana Mijalkovića 14, Jagodina (SERBIA) ORCID 0009-0003-1828-8532

Emails: dacaradoicic11@gmail.com; vladislavastojic@gmail.com; domskapedagogija@gmail.com

ABSTRACT

Cyberbullying among adolescents is a pressing issue exacerbated by the widespread use of digital technologies. It often manifests through verbal or relational aggression via social networks and messaging platforms, significantly impacting the emotional well-being of young people. This study aims to explore the nature of cyberbullying among adolescents, focusing on gender differences and variations in academic performance. Conducted with a sample of 109 high school students in Čuprija, the research utilized a structured questionnaire to investigate the prevalence and forms of cyberbullying and its correlation with academic success. Findings reveal that while gender does not significantly affect the frequency of cyberbullying, female adolescents experience specific forms of cyber violence more frequently, such as receiving inappropriate messages. Additionally, academic performance did not show a significant correlation with the likelihood of committing cyberbullying. The study highlights the need for targeted interventions and improved digital literacy education to address these issues effectively.

Keywords: Cyberbullying, Adolescents, Digital Technology, Digital Abuse, Online Harassment, Social Media

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INTRODUCTION

The emergence and advancement of the Internet have created numerous opportunities and benefits for society, particularly in areas such as information sharing, communication, and education. As technology has evolved over time, the Internet has become an integral part of daily life, utilized by people of all generations. However, alongside these opportunities, the Internet has also become a platform for various illegal activities, with its youngest users often being the least protected [1]. In this context, it is crucial to note that the Internet and technological advancements have given rise to a new form of violence known as cyber violence, which is perpetrated through modern communication technologies and systems [2]. The World Health Organization defines violence as the intentional use of physical force or power against oneself, another individual, group, or community, and it can manifest in various forms, including physical, psychological, sexual, or even economic abuse [3]. Similarly, cyber violence encompasses these same forms of abuse, but they are carried out via the Internet and digital technologies. However, it is important to recognize that physical attacks are less prominent in cyber violence compared to traditional violence. The primary objective of cyber violence is often to intimidate, humiliate, or infuriate the victim, leading to lasting psychological and emotional harm [4]. Adolescents, in particular, are highly susceptible to cyber violence. According to certain reports, one-third of Internet users globally are children and adolescents, who are growing up in a world increasingly shaped by digital technologies. Given the darker aspects of the Internet and these technologies, it is reasonable to fear that this demographic is particularly vulnerable to cyber violence [5]. Adolescence, a highly emotional and stressful period, is frequently marked by hormonal and emotional changes, which can influence behavior in various ways. Mood swings are common during this time and can lead to deviant behavior, including acts of violence against others [6]. Technological advancements have made it easier than ever for such violence to be perpetrated, often involving a large number of participants and characterized by the repetitive nature of the behavior. The aim of this paper is to explore the nature of cyberbullying among adolescents, focusing on differences across gender and academic performance.

LITERATURE REVIEW

Cyberbullying does not yet have a universally accepted definition. It is often characterized as aggressive and inappropriate behavior conducted through electronic means and digital media, repeatedly inflicted by an individual on themselves or others [7]. Cyber violence is frequently used interchangeably with terms like electronic and digital violence; however, it specifically refers to bullying and abuse facilitated by modern technological solutions, including mobile phones, the Internet, and various online and virtual platforms [8]. A distinguishing feature of cyber violence is its potential to occur continuously, even in traditionally safe environments like the victim's home. It has a mass impact because it can be witnessed by others online, and most concerningly, the absence of physical contact means the perpetrator lacks direct insight into the physical or mental harm they are causing the victim [1]. The situation is further complicated by the fact that perpetrators often conceal their identities, which can make it difficult, if not impossible, to hold them legally accountable [8]. Cyberbullying is typically repetitive and can occur through various channels, including telephones, social networks, online platforms, online video games, and messaging applications [9]. It manifests in various forms, such as sending offensive messages, engaging in hate speech, sharing unauthorized photos and videos, distributing explicit material, and committing acts of sexual harassment [10]. Other forms of cyberbullying include stalking, insulting, creating and sharing unauthorized images and videos, spreading gossip, impersonating others, and deceptive behavior [8].

As previously noted, cyber violence is particularly impactful on adolescents. During this emotionally charged stage of life, when personality and behavior are still developing [6], adolescents often exhibit strong reactions to cyberbullying. These reactions typically include feelings of anger, anxiety, fear, depression, and shame [10]. Consequently, cyberbullying has become a significant issue in schools, as highlighted by Veljković et al. [9]. Among adolescents, cyberbullying often manifests as verbal or relational violence, such as deliberate exclusion from social groups, and is primarily conducted through mobile phones, social networks, and other online services [11]. Technological advancements and the rise of artificial intelligence have enabled adolescents to create highly realistic photos and videos of their victims. This trend builds on previous forms of cyber violence, where similar content was produced [12], but today, these actions can be executed much more quickly and easily thanks to Artificial Intelligence.

Statistics indicate that between 11% and 17% of adolescents globally have engaged in violence through digital media, while a significantly larger proportion, ranging from 19% to 29%, have been victims at least once [8]. Many adolescents who commit cyberbullying do so because they perceive it to be much easier to perpetrate through digital media than in a "face-to-face" confrontation [1]. Research conducted with 165 high school students in Croatia revealed that there are no significant differences between boys and girls in terms of exposure to violence. However, it was found that older adolescents are more likely both to experience and perpetrate violence. A concerning aspect is that adolescents often lack the motivation to report these issues or seek help, which prolongs the violence and exacerbates its harmful effects [6]. A study conducted on 1,529 adolescents in China found that younger boys are more likely to engage in violent behavior, and they often display a predisposition towards conflict and aggression [2]. In a comprehensive meta-analysis, Park et al. concluded that cyber violence is more prevalent among males, who are more frequently both the perpetrators and victims of such behavior. The authors also identified a significant negative correlation between academic performance and involvement in cyberbullying, noting that adolescents with lower grades are more likely to engage in violent behavior, both in traditional forms and online [13].

In the Republic of Serbia, research on cyber violence exists, but studies focusing specifically on adolescents remain relatively scarce, particularly in the Pomoravlje region. One of the more recent studies was conducted in the Belgrade region, involving a sample of 1,526 high school students. The results indicated that girls were more frequently exposed to violence than boys, particularly among older students. Boys, on the other hand, were more often the perpetrators, with over 80% of the incidents involving both bullies and victims from the same class in the case of girls. In contrast, boys who engaged in bullying were predominantly from older classes [11]. A 2017 study, which included 3,267 participants, some of whom were adolescents from the first grades of high schools in the Republic of Serbia, also found that girls were more exposed to cyber violence [12]. Similarly, a 2022 study involving 150 respondents aged 16-25 revealed that women were more frequently targeted by cyberbullying than men. In this study, over 30% of respondents reported experiencing violence through social networks, with other forms of cyber violence including phone harassment, unauthorized password changes, sharing inappropriate material, and the distribution of personal photos and videos [4]. Another study included 312 subjects of similar age (18-25 years), of which 33.3% were adolescents. The findings showed that over 51% of adolescents had been exposed to online stalking, over 27% had been excluded from social media groups or chats, over 24% had experienced phone harassment, and in 22.76% of cases, a fake social media account was created, amounting to identity theft [14]. In a survey conducted with 600 high school students in Niš, the results revealed that harassment was present in more than 70% of cases, primarily through social networks, email, and phone communication [15]. According to the relevant works in this area, the following research hypotheses were defined:

H1: There are statistically significant differences in the nature of cyberbullying between male and female adolescents.

H2: There are statistically significant differences in the extent of cyberbullying against others depending on the academic success of adolescents.

H3: There are statistically significant differences in the extent of cyberbullying experienced depending on the academic success of adolescents.

RESEARCH METHODOLOGY

To address the hypotheses and considering the lack of research of this kind in the Pomoravlje region, an empirical study was conducted on a sample of adolescents in Čuprija. The research process was carried out using survey methods and questionnaire techniques. The research was conducted in the first quarter of 2024. Given the nature of the study, which involves adolescent participants, some of whom may be minors, it was essential to meet specific ethical and legal requirements before commencing the research. Specifically, each adolescent participant was required to obtain parental consent prior to involvement in the study. This consent form detailed the study's purpose, methodology, and the assurance of anonymity. Furthermore, the research was conducted only after obtaining approval from the principals of the participating schools, in this case, the High School of Medicine. The study sample comprised 109 respondents.

The survey was distributed in paper form, and respondents (adolescents) were instructed to place their completed questionnaires into a sealed box, which only the researcher could access. The questionnaire was divided into three sections. The first section contained semi-closed questions designed to assess the existence, frequency, and nature of cyberbullying, as well as the frequency of internet and social media use. In the second section, statements were included to determine the nature of cyberbullying to which the adolescents were exposed, with respondents indicating their level of agreement on a five-point Likert scale, where 1 represented complete disagreement and 5 represented complete agreement. The third section collected demographic information such as gender, age, and academic performance. The questions and statements in the second and third sections of the questionnaire were developed based on insights from similar studies conducted by Popadić and Kuzmanović [16], Stanković [17], Bocilj [18], and Ćetin et al. [19]. The research employed frequency analysis, t-test, and ANOVA test. Data processing and analysis were conducted using SPSS V26 software.

RESULTS AND DISCUSSION

The sample consists of 75.2% female respondents and 24.8% male respondents, with an average age of 16 years. The Grade Point Average (GPA) in school was 4.21. All respondents own a smartphone, but 69.7% of them don't use it for SMS messaging, but for internet-based messaging services. Research indicates that, on average, over 30 messages are sent per day. Adolescents typically began using the Internet at the age of ten, and more than 92% of respondents use internet services daily. Additionally, 98.2% of respondents are active on social networks, with Instagram being universally used (100% respondents), followed by TikTok (41.71%), Snapchat (31.9%), WhatsApp (11.93%), Facebook (14.68%), Viber (4.59%), and lastly, X (0.92%).

Regarding the frequency of violence, 11.2% of adolescents reported experiencing some form of violence at least once. Specifically, 5.5% stated that it occurred at least once, 1.8% reported it happened two or three times, and 4.6% indicated it happened more frequently. On the other hand, 7.4% of adolescents admitted to committing cyber violence against others: 3.7% did so at least once, 2.8% two or three times, and 0.9% several times over the year. The most common forms of violence reported were sharing disturbing content or offensive messages (20.2%), unwanted recording via phone (13.8%), and phone harassment (13.8%). To examine the H1 hypothesis, a t-test was applied, with the results presented in Table 1.

Table 1. Results of the t test: structure of cyberbullying depending on gender

Items	Mean		Sig.
	M	F	
1. I received an email with inappropriate or disturbing content.	1,00	1,13	0.048**
2. I have received inappropriate or harassing messages via chat.	1,11	1,61	0.001***
3. I received threats via chat.	1,11	1,38	0.057*
4. Someone posted false and inaccurate information about me via chat.	1,22	1,41	0.308
5. Someone sent false and inaccurate messages about me to my friends and family.	1,07	1,41	0.013**
6. Someone encouraged others to write incorrect and false information against me in the chat.	1,29	1,36	0.706

*Note: M-Male; F-Female: *-Significance level 0.1; ** 0.05; *** 0.01.*

Source: authors' calculations

Although no statistically significant differences were identified in the frequency of cyberbullying between male and female adolescents, contrary to the findings of other researchers [4, 12], the t-test revealed differences in almost all attitudes related to the nature of cyberbullying between genders. As shown in Table 1, female adolescents are more frequently exposed to receiving inappropriate or disturbing messages via chat, with this being the area where the highest average value was observed, and statistical significance was achieved at a level of $p < 0.01$. Additionally, the analysis indicated that female adolescents are more often targeted by the creation and distribution of false and inaccurate messages to their family members. They were also more likely to receive inappropriate content via email and to receive threats via chat. These findings can be associated with cultural factors that exacerbate such violence, particularly in societies where there is a pronounced power imbalance and clear distinctions in social roles based on

gender. In such contexts, physical and cyber violence is more likely to be directed toward women. Similar results were found in Croatia [6], a country with cultural similarities to Serbia. According to the European Institute for Gender Equality, cyber violence against women often includes forms such as cyber flashing, sextortion, and virtual rape [20]. This trend may explain why female adolescents in this study reported receiving more messages and emails with inappropriate content. The higher average values observed, particularly with statistical significance, suggest that female adolescents are disproportionately affected by the social dynamics that fuel cyberbullying. These gender-based differences highlight the need for targeted interventions that address the specific vulnerabilities and experiences of female adolescents in the digital world. However, since statistically significant differences were not identified across all attitudes, the H1 hypothesis can be partially accepted, indicating that there are partially statistically significant differences in the nature of cyberbullying between male and female adolescents.

To examine whether there is a difference in the frequency of experienced and perpetrated violence depending on academic success, the variables were first grouped to make them suitable for the ANOVA test. Grouping was carried out on the basis of GPA. Three groups were formed: Group 1 (students with a GPA of 2.5-3.49), Group 2 (students with a GPA of 3.5-4.49), and Group 3 (students with a GPA higher than 4.5). Groups with a GPA of less than 2.5 were not formed, as there were no students in the sample with such or lower scores. Regarding the perpetration of violence, the ANOVA test results showed no statistically significant differences based on academic success ($p = 0.364$). This finding contradicts the conclusions of previous study [13], which indicated that cyberbullying is more commonly committed by adolescents with lower academic performance. The lack of statistically significant differences in this study may be attributed to the relatively high academic success of all respondents in the sample, as indicated by the average GPA of 4.21 reported earlier. Therefore, the H2 hypothesis, which posited differences in the extent of cyber violence perpetrated based on academic success, cannot be accepted. However, the notion of a negative correlation between academic success and the frequency of cyberbullying should not be entirely dismissed. It may be worth re-examining this relationship in future research with a sample that includes a more balanced distribution of students across different levels of academic achievement. The results of the ANOVA test concerning the frequency of experienced violence are shown in Table 2.

Table 2. Frequency of suffered cyberbullying: ANOVA test results

Items	F	Sig.
1. I received an email with inappropriate or disturbing content.	0.496	0.627
2. I have received inappropriate or harassing messages via chat.	3.020	0.053*
3. I received threats via chat.	0.750	0.475
4. Someone posted false and inaccurate information about me via chat.	0.948	0.391
5. Someone sent false and inaccurate messages about me to my friends and family.	0.489	0.615
6. Someone encouraged others to write incorrect and false information against me in the chat.	1.080	0.343

Note: *-Significance level 0.1.

Source: authors' calculations

The ANOVA test results indicated a significant difference in the frequency of suffered cyberbullying across academic success groups for one specific attitude. To identify which groups exhibited this difference, the Scheffe alpha post-test was applied, revealing the following average values: Group 1 had an average of 2.4, Group 2 had an average of 1.36, and Group 3 had an average of 1.71. This analysis showed that Group 1 students reported receiving the most inappropriate or disturbing messages via chat, followed by Group 2. Interestingly, students in Group 3, who had the highest academic success, reported receiving the fewest such messages. This result may be attributed to the impact of academic success. Education today often includes training in information technology and cybersecurity, equipping high-achieving adolescents with the knowledge to avoid engaging with messages from unknown or suspicious sources, thereby reducing their exposure to cyberbullying.

CONCLUSIONS

The analysis of cyberbullying among adolescents reveals a complex picture of its prevalence and impact, influenced by various factors such as gender, academic performance, and cultural context. Although the frequency of cyberbullying incidents between male and female adolescents showed no significant statistical differences, the nature of the cyberbullying experienced differed notably by gender. Female adolescents were more frequently subjected to inappropriate or disturbing messages, false information dissemination, and other forms of cyber harassment. This discrepancy may stem from gender-specific vulnerabilities and cultural dynamics that influence the types of cyberbullying experienced. The findings align with studies from similar cultural contexts but also suggest that gender-based differences in cyberbullying are significant and warrant targeted interventions. Additionally, the study did not find a statistically significant correlation between academic success and the frequency of committing cyberbullying, contrary to some prior research suggesting a link between lower academic performance and higher rates of cyberbullying. This discrepancy may be attributed to the relatively high academic achievement of the sample, which could skew the results. The study did reveal differences in the types of cyberbullying experienced based on academic performance, with lower-achieving students reporting higher exposure to disturbing messages. This could be due to increased awareness and knowledge about cyber safety among higher-achieving students, potentially mitigating their risk. Overall, the research highlights the need for comprehensive strategies addressing the specific needs of different adolescent groups to effectively combat cyberbullying. Gender-specific interventions and educational programs that enhance awareness of cyber safety could help reduce the incidence and impact of cyberbullying.

The results of the study contribute to the growing body of scientific literature on cyberbullying, particularly among adolescents. Given the current development stage of research on cyber violence in Serbia and the notable lack of studies in specific regions like Pomoravlje, these findings establish a foundation for future research in this area. From a social perspective, the results are valuable for educational and social institutions, as they identify the groups most affected by cyber violence and the predominant forms it takes. This information is crucial for developing targeted management strategies.

However, the study has several limitations that should guide future research. The sample size was relatively small and confined to a single region, which may affect the generalizability of the findings. To achieve more reliable results, future studies should include larger samples and extend the research to other schools and regions, allowing for more robust comparisons and conclusions. Additionally, the sample's structure, with an overrepresentation of certain socio-demographic groups, may impact the reliability of the ANOVA and t-test results. Employing more representative sampling methods in future research could address this issue and improve the accuracy of the findings. Future studies should also explore how additional factors, such as the time spent online, parental influence on internet usage, and the number of social networks used, impact the nature of cyberbullying. This broader perspective could provide a more comprehensive understanding of the factors contributing to cyberbullying among adolescents.

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