Osmangazi Journal of Med, 2025;47(3):467-476
DOI: 10.20515/otd.1619413

Research Article
Araştırma Makalesi

Osmangazi Journal of Medicine
e-ISSN: 2587-1579

Examining the Link Between Impulsivity, Internet Addiction, Cyberbullying, and Cybervictimization Among Adolescents in a Child and Adolescent Psychiatry Outpatient Clinic

Çocuk ve Ergen Psikiyatrisi Kliniğindeki Ergenlerde Dürtüsellik, İnternet Bağımlılığı, Siber Zorbalık ve Siber Mağduriyet Arasındaki İlişkinin Araştırılması

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Abstract: This study investigated the connections between Internet addiction, impulsivity, cyberbullying, and cybervictimization in adolescents aged 12 to 18 years who sought care at a university hospital's child and adolescent psychiatry outpatient clinic. This study involved 283 adolescents. The Internet Addiction Test (IAT), the Barratt Impulsiveness Scale-11 (BIS-11), and the Revised Cyberbullying Inventory-II (RCBI-II) were administered to participants who fulfilled the inclusion and exclusion criteria and consented to join the study. Analyses were conducted by dividing the IAT total scores according to the cut-off value and grouping the RCBI-II-CB and RCBI-II-CV scores as 10 or greater. Among adolescents with Internet addiction, statistically significant higher scores were observed across all the aforementioned scales and inventories. Correlation tests revealed significant associations among all these scales and inventories. Furthermore, logistic regression analyses demonstrated that impulsivity had a significant effect on both Internet addiction and cyberbullying as well as cybervictimization. Internet addiction was found to have a significant impact on both cyberbullying and cybervictimization. Additionally, cyberbullying and cybervictimization were shown to have significant effects on each other. However, cyberbullying and cybervictimization were not found to have a significant effect on Internet addiction. This research contributes valuable insights to the literature by presenting findings consistent with prior studies while also introducing divergent results that enhance and broaden the current understanding. These differences serve as a foundation for future research, offering valuable guidance for further studies.
Keywords: Internet Addiction, Impulsivity, Cyberbullying, Cybervictimization

Özet: Bu çalışmada bir üniversite hastanesinin çocuk ve ergen psikiyatri polikliniğine başvuran 12-18 yaş arası ergenlerde internet bağımlılığı, dürtüsellik, siber zorbalık ve siber mağduriyet arasındaki bağlantılar araştırılmıştır. Çalışmaya 283 ergen katılmıştır. Dahil etme ve dışlama kriterlerini karşılayan ve çalışmaya katılmayı kabul eden katılımcılara İnternet Bağımlılığı Testi (IAT), Barratt Dürtüsellik Ölçeği-11 (BIS-11) ve Revize Siber Zorbalık Envanteri-II (RCBI-II) uygulandı. Analizler, IAT toplam puanlarının kesme değerine göre ve RCBI-II-CB ve RCBI-II-CV puanlarının 10 veya daha büyük olacak şekilde gruplandırılması ile gerçekleştirilmiştir. İnternet bağımlılığı olan ergenlerde, yukarıda belirtilen tüm ölçeklerde ve envanterlerde istatistiksel olarak anlamlı derecede yüksek puanlar saptanmıştır. Korelasyon testleri, bu ölçekler ve envanterler arasında anlamlı ilişkiler olduğunu göstermiştir. Ayrıca, lojistik regresyon analizleri, dürtüselliğin hem internet bağımlılığı hem de siber zorbalık ve siber mağduriyet üzerinde anlamlı bir etkisinin olduğunu ortaya koymuştur. İnternet bağımlılığının hem siber zorbalık hem de siber mağduriyet üzerinde anlamlı bir etkisi bulunmuştur. Bunun yanı sıra, siber zorbalık ve siber mağduriyetin birbirleri üzerinde anlamlı etkilerinin olduğu saptanmıştır. Ancak, siber zorbalık ve siber mağduriyetin internet bağımlılığı üzerinde anlamlı bir etkisinin olmadığı belirlenmiştir. Bu çalışma, önceki bulgularla uyumlu sonuçlar sunarak literatüre önemli bir katkı sağlarken, aynı zamanda farklı sonuçlarıyla da mevcut bilgi birikimini zenginleştirmekte ve gelecekteki araştırmalara değerli bir rehber olmaktadır.
Anahtar Kelimeler: İnternet Bağımlılığı, İmpulsivite, Siber Zorbalık, Siber Mağduriyet

Ethics Committee Approval: This study adhered to the principles outlined in the Declaration of Helsinki. Ethical approval was granted by the Ethics Committee of Afyonkarahisar Health Sciences University Faculty of Medicine on September 6, 2024 (approval number: 2024/308).

Informed Consent: All participants and their parents provided both verbal and written informed consent to participate in the study.

Authorship Contributions Medical Practices: YÖ, ÇÇS, AGÖ. Concept: YÖ, ÇÇS. Design: YÖ, ÇÇS. Data, Collection or Processing: YÖ, ÇÇS, AGÖ, AK, HGG. Analysis or Interpretation: YÖ, ÇÇS, AGÖ, AK, HGG. Literature Search: YÖ, ÇÇS, AK, HGG. Writing: YÖ, ÇÇS, AK, HGG.

Copyright Transfer Form: The copyright transfer form was duly signed by all authors.

Conflict of Interest: The authors declared no conflicts of interest.

Financial Disclosure: This study did not receive any financial support or assistance; therefore, there are no financial disclosures.

Received : 14.01.2025

Accepted :17.04. 2025

Published :.25.04. 2025

How to cite/ Atıf için: Özkan Y, Çelikkol Sadiç Ç, Özmutlu AG, Kara A, Gerçek HG, Examining the Link Between Impulsivity, Internet Addiction, Cyberbullying, and Cybervictimization Among Adolescents in a Child and Adolescent Psychiatry Outpatient Clinic, Osmangazi Journal of Medicine, 2025;47(3):467-476

1. Introduction

In recent times, there has been a notable increase in Internet and social media usage, especially among adolescents (1). Currently, over half of the global population actively uses platforms like WhatsApp, WeChat, Facebook, and Instagram (2). Similarly, in Turkey, active social media users—primarily utilizing Facebook, YouTube, WhatsApp, Facebook Messenger, WeChat, QQ, and Instagram—constitute 63% of the population, significantly exceeding the global average of 39% (3). This growing trend has coincided with an increase in problematic Internet use, often referred to as Internet addiction. Defined as excessive and uncontrollable Internet use that disrupts daily functioning and causes significant life challenges, Internet addiction has become a critical public health issue (4). Adolescents are particularly vulnerable, with prevalence rates ranging from 20% to 26.5% in this age group (5). While social media offers numerous benefits, excessive or problematic use has been linked to various mental health issues, including depression, ADHD, substance use disorders, eating disorders, anxiety, social anxiety, low self-esteem, and reduced life satisfaction and well-being (6, 7, 8). Moreover, the extensive integration of social media into daily life has been linked to heightened peer bullying and victimization, leading to an increase in cyberbullying and cybervictimization, as highlighted in recent research (7, 8, 9, 10).

Cyberbullying is commonly defined as deliberate, repeated acts of aggression intended to threaten, harass, or humiliate others, conducted through electronic communication channels (11). Unlike traditional bullying, cyberbullying operates in a virtual environment where unrestricted expression often lacks social oversight, allowing it to reach a wider audience (12). Moreover, the anonymity afforded to perpetrators can intensify harmful behaviors, enabling them to target victims without facing direct accountability (13). Cybervictimization, conversely, refers to the experiences of individuals subjected to cyberbullying (14). Additionally, cybervictims are often found to engage in cyberbullying behaviors themselves, suggesting a bidirectional relationship (15). Prevalence rates for cyberbullying and cybervictimization in Western countries range from 4% to 56% and 6% to 72%, respectively (16, 17). Among Turkish adolescents, studies report prevalence rates ranging from 6.4% to 47.6% for engaging in cyberbullying behaviors and from 5.1% to 56% for experiencing cybervictimization (18, 19). A study conducted in Türkiye in 2019 reported that the prevalence of cybervictimization and cyberbullying was 62.6% and 53.3%, respectively (20). Similarly, a more recent study in 2021 found that the prevalence of cyberbullying among high school students was 65.3% (21). Research highlights strong associations between cybervictimization and issues such as low self-esteem, anxiety, depressive symptoms, and suicidal ideation (22). Cultural factors significantly influence the underlying causes of cyberbullying and cybervictimization. A meta-analysis of 81 empirical studies identified risky technology use and psychological factors, including depression and anxiety, as key predictors (23). Furthermore, social and cognitive elements, such as empathy, moral disengagement, feelings of responsibility, and schemas related to mistrust and inadequacy, were linked to increased vulnerability to both behaviors (24).

Impulsivity is characterized by a predisposition to make hasty decisions without thoroughly evaluating possible adverse outcomes and to act swiftly on these choices. It encompasses behaviors performed without adequate reflection, instinctive actions devoid of conscious judgment, and swift mental responses lacking foresight. Impulsivity is a multidimensional construct, incorporating aspects such as present-focused thinking, difficulty delaying gratification, heightened sensitivity, risk-taking, impatience, pleasure-seeking, and reward responsiveness. It also involves acting impulsively without evaluating whether the action represents the best possible choice (25, 26). In the digital context, impulsivity can manifest as impulsive cyberbehavior. Individuals with higher impulsivity levels often struggle to regulate their Internet use, making impulsivity a potential risk factor for Internet addiction disorder (IAD) (26). Studies suggest a link between poor impulse control and compulsive Internet use, with such individuals more likely to exhibit aggressive behaviors online. For instance, among Greek adolescents, impulsive problematic Internet use was identified as an independent predictor of cyberbullying perpetration (27). A systematic review of meta-analyses revealed that low technology use served as a strong protective factor against cyberbullying (28). Similarly, research by Zych et al. (2019b) demonstrated that problematic Internet use predicted cyberbullying perpetration six months later in Spanish adolescents (29). These findings indicate that compulsive Internet use is a significant individual risk factor for cyberbullying and may mediate the relationship between impulsivity and cyberbullying.

As discussed, impulsivity, Internet addiction, cyberbullying, and cybervictimization are interconnected. However, no existing studies have comprehensively examined the relationships among these variables in adolescents. This study explored the connections between Internet addiction, impulsivity, cyberbullying, and cybervictimization in adolescents who sought care at a university hospital's child and adolescent psychiatry outpatient clinic.

The research sought to answer two primary questions: (a) Are there significant differences in cyberbullying, cybervictimization, and impulsivity when comparing adolescents who have Internet addiction to those who do not? (b) Is there a significant correlation among Internet addiction, cyberbullying, cybervictimization, and impulsivity?

2. Materials and Methods

2.1. Participants and Research Structure

The study, conducted at a single center between September 2024 and January 2025, utilized a cross-sectional design and included adolescents aged 12 to 18 years who presented to the Child and Adolescent Psychiatry Outpatient Clinic at the Faculty of Medicine, Afyonkarahisar Health Sciences University.

The objectives and procedures of the study were thoroughly explained to both the adolescent participants and their parents, and informed consent was acquired in both verbal and written form from all involved parties. The study sample consisted of 283 patients who had no active psychotic symptoms, no pervasive developmental disorders, and sufficient mental capacity to complete the required questionnaires. These psychiatric diagnoses were excluded from the study based on clinical observation and evaluation in accordance with DSM-5 criteria. Each participant was provided with a sociodemographic questionnaire by a clinician, followed by the completion of the Internet Addiction Test (IAT), the Barratt Impulsivity Scale (BIS-11), and the Revised Cyberbullying Inventory-II (RCBI-II) by the adolescents.

2.2. Data Collection Tools

2.2.1. Sociodemographic Questionnaire: This form was specifically designed by the researchers to gather sociodemographic details from participants, such as their age and gender.

2.2.2. Internet Addiction Test (IAT): Originally developed by Young, the IAT assesses Internet usage patterns and addiction severity. The scale comprises 20 items rated on a 5-point Likert scale, where higher scores reflect increased severity of addiction. (30). Total scores are categorized as follows: 0–30 (normal use), 31–49 (mild addiction), 50–79 (moderate addiction), and 80–100 (severe addiction) (31). In the Turkish version of the IAT, a total score exceeding 50 points is classified as pathological Internet use (32). Based on this classification, participants in this study were divided into two groups: the Internet addiction group (IAT score ≥ 50) and the non-addiction group (IAT score ≤ 49) (33). Bayraktar (2001) validated the Turkish adaptation, reporting a Cronbach's alpha of 0.91 and a Spearman-Brown coefficient of 0.87 (34).

2.2.3. Barratt Impulsivity Scale-11 (BIS-11): The BIS-11, created by Patton et al, evaluates impulsivity through 30 items scored on a 4-point Likert scale, ranging from 1 to 4. The scale evaluates three subdomains: non-planning, motor impulsivity, and cognitive impulsivity, with higher scores reflecting greater impulsivity (35). The Turkish version has undergone validity and reliability testing (36).

2.2.4. Revised Cyberbullying Inventory-II (RCBI-II): The RCBI-II, developed by Topcu and Erdur-Baker (2018), is a self-report measure assessing the severity of both cyberbullying (RCBI-II-CB) and cybervictimization (RCBI-II-CV) in adolescents aged 14–18 (37). The scale includes 10 items, each rated twice by participants—once for reporting cyberbullying behaviors ("I did it") and once for victimization experiences ("It happened to me"). An example item is "Sending embarrassing or hurtful messages." Each dimension is rated on a 4-point Likert scale: 1 (none), 2 (once), 3 (two to three times), and 4 (more than three times). The scores vary between 10 and 40, with higher values reflecting increased experiences of cyberbullying or cybervictimization. Categorical scoring is also possible to identify cyberbullies, victims, both, or uninvolved individuals. Participants scoring 10 or higher are categorized as uninvolved. The Turkish version demonstrated strong internal consistency, with Cronbach's $\alpha = .80$ for cybervictimization and Cronbach's $\alpha = .79$ for cyberbullying.

2.3. Statistical Analysis

The statistical analysis was performed with SPSS software, version 26.0. Descriptive statistics were utilized to assess the demographic characteristics of

the sample. Depending on whether the data distribution was normal, either the Mann-Whitney U-test or the Student's t-test were used to compare groups for total IAT scores, divided by the cutoff value. To explore the relationships between variables, Spearman correlation analysis was utilized. Factors identified as significant in earlier analyses were included in logistic regression models to identify independent predictors of Internet addiction in a multivariate context. With RCBI-II-CB and RCBI-II-CV scores classified as 10 or higher, logistic regression analyses were performed to investigate the effects of the research factors on cyberbullying and cybervictimization. Statistical significance was determined at a Type I error level of <5%.

3. Results

A total of 283 adolescents were evaluated, consisting of 185 females (65.4%) and 98 males (34.6%) with a mean age of 15.03 ± 1.8 years.

Based on the IAT threshold score, the study participants were split into two groups: 87 adolescents (30.7%) in the Internet addiction group (IAT score ≥ 50) and 196 adolescents (69.3%) in the non-addiction group (IAT score ≤ 49). The gender distribution (χ^2 = 0.813, p = 0.056) and mean age (15.04 ± 0.18 years vs. 15.02 ± 0.13 years) (z = -0.068, p = 0.946) did not significantly differ between the two groups. There were no significant differences in paternal age (z = -1.394, p = 0.163) or maternal age (z = -1.730, p = 0.084) between the two groups. There were no statistically significant difference in paternal educational level ($\chi^2(4) = 3.41$, p = 0.492) or maternal educational level ($\chi^2(6) = 11.12$, p = 0.085) between the two groups.

The Internet addiction group demonstrated significantly higher scores compared to the non-addiction group across various measures, including the total IAT score (p < 0.001), total BIS-11 score (p < 0.001), BIS-11 cognitive impulsivity subscale score (p < 0.001), BIS-11 non-planning subscale score (p < 0.001), BIS-11 motor impulsivity subscale score (p < 0.001), RCBI-II-CB score (p < 0.001), and RCBI-II-CV score (p < 0.001) (Table 1).

Table 1. Comparison of the mean scores for the IAT total, BIS-11 total and subscales, RCBI-II-CB, and RCBI-II-CV across groups categorized by the presence or absence of Internet addiction.

	Presence of Internet Addiction (n=87)		**Absence of Internet Addiction (n=196)**			
	Mean	**SD**	**Mean**	**SD**	**z**	**p***
IAT total score	66.60	1.51	28.71	0.90	-13.424	**<0.001**
BIS-11 total score	79.40	1.09	67.06	0.83	-7.999	**<0.001**
BIS-11 cognitive impulsivity subscale score	21.97	0.41	17.90	0.31	-6.942	**<0.001**
BIS-11 non-planning subscale score	32.44	0.44	27.78	0.37	-7.089	**<0.001**
BIS-11 motor impulsivity subscale score	24.97	0.59	21.37	0.35	-5.099	**<0.001**
RCBI-II-CB score	16.83	0.71	12.80	0.27	-5.393	**<0.001**
RCBI-II-CV score	17.43	0.72	13.45	0.31	-4.941	**<0.001**

*SD: standard deviation; *Mann Whitney U-test*

IAT: Internet Addiciton Test; BIS-11: Barratt Impulsivity Scale- 11; RCBI-II-CB: Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV: Revised Cyberbullying Inventory-II Cybervictimization

The findings of the Spearman correlation analysis demonstrated that all scale scores, including the IAT total, BIS-11 total and its subscales, RCBI-II-CB, and RCBI-II-CV, were significantly positively correlated with each other (p < 0.001). The relationship between the RCBI-II-CV and BIS-11 motor impulsivity subscale scores was weak, whereas all other relationships were moderate to strong. Detailed results are presented in Table 2.

Table 2. Results of the Spearman correlation analysis examining the relationships between the IAT, BIS-11, RCBI-II-CB, and RCBI-II-CV scores among all participants (n = 283).

	1	2	3	4	5	6	7
1. IAT total	1						
2. BIS-11 total	.524**	1					
3. BIS-11 cognitive impulsivity	.490**	.830**	1				
4. BIS-11 non-planning	.422**	.758**	.464**	1			
5. BIS-11 motor impulsivity	.357**	.811**	.608**	.377**	1		
6. RCBI-II-CB	.406**	.498**	.458**	.362**	.402**	1	
7. RCBI-II-CV	.384**	.398**	.388**	.324**	.266**	.723**	1

*Spearman Correlation; ** p<0.001*
IAT: Internet Addiciton Test; BIS-11: Barratt Impulsivity Scale- 11; RCBI-II-CB: Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV: Revised Cyberbullying Inventory-II Cybervictimization

The relationships between Internet addiction and age, gender, BIS-11 total scores, RCBI-II-CB scores, and RCBI-II-CV scores were investigated using logistic regression analysis. The results showed that total impulsivity scores were significantly and positively associated with Internet addiction (B = 0.079, Exp(B) = 1.083, p < 0.001). Specifically, each unit increase in impulsivity score was associated with an 8.3% increase in the odds of Internet addiction (Table 3).

Table 3. Results of the Logistic Regression Analysis of BIS-11 total scores, RCBI-II-CB scores, and RCBI-II-CV scores to identify factors associated with Internet addiction.

	B	**Std. Error**	**p**	**Exp(B)**	**Cox & Snell R2**
					0.222
Gender	0.053	0.323	0.869	1.055	
Age	0.007	0.086	0.936	1.007	
BIS-11 total scores	0.079	0.015	**<0.001**	1.083	
RCBI-II-CB scores	0.023	0.042	0.179	1.023	
RCBI-II-CV scores	0.064	0.035	0.109	1.066	

IAT: Internet Addiciton Test; BIS-11: Barratt Impulsivity Scale- 11; RCBI-II-CB: Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV: Revised Cyberbullying Inventory-II Cybervictimization

To assess the impact of the study parameters on cyberbullying, the RCBI-II-CB scores were categorized into two groups: those scoring 10 and those scoring above 10. To investigate the relationships between cyberbullying and age, gender, BIS-11 total scores, IAT total scores, and RCBI-II-CV scores, logistic regression analyses were conducted. The findings revealed that higher levels of impulsivity (B = 0.057, Exp(B) = 1.059, p < 0.001), Internet addiction (B = 0.016, Exp(B) = 1.016, p = 0.014), and cybervictimization (B = 0.485, Exp(B) = 1.624, p < 0.001) were significantly and positively associated with cyberbullying. These findings indicate that increases in impulsivity, Internet addiction, and experiences of cybervictimization increase the likelihood of engaging in cyberbullying behaviors (Table 4).

Table 4. Results of the Logistic Regression Analysis of BIS-11 total scores, IAT total scores, and RCBI-II-CV scores to identify factors associated with cyberbullying.

	B	**Std. Error**	**p**	**Exp(B)**	**Cox & Snell R2**
					0.404
Gender	0.365	0.288	0.205	0.694	
Age	0.155	0.075	0.139	1.168	
BIS-11 total scores	0.057	0.14	**<0.001**	1.059	
IAT total scores	0.016	0.08	**0.014**	1.016	
RCBI-II-CV scores	0.485	0.069	**<0.001**	1.624	

IAT: Internet Addiciton Test; BIS-11: Barratt Impulsivity Scale- 11; RCBI-II-CB: Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV: Revised Cyberbullying Inventory-II Cybervictimization

To assess the impact of the study parameters on cybervictimization, the RCBI-II-CV scores were categorized into two groups: those scoring 10 and those scoring above 10. To investigate the relationships between cybervictimization and age, gender, BIS-11 total scores, IAT total scores, and RCBI-II-CB scores, logistic regression analyses were conducted. The results demonstrated that impulsivity (B = 0.041, Exp(B) = 1.042, p = 0.04), Internet addiction (B = 0.015, Exp(B) = 1.015, p = 0.025), and cyberbullying perpetration (B = 0.562, Exp(B) = 1.754, p < 0.001) were significantly and positively associated with cybervictimization. These findings suggest that adolescents with higher impulsivity and Internet addiction levels, as well as those who engage in cyberbullying, are at increased risk of becoming cybervictims (Table 5).

Table 5. Results of the Logistic Regression Analysis of BIS-11 total scores, IAT total scores, and RCBI-II-CB scores to identify factors associated with cybervictimization.

	B	**Std. Error**	**p**	**Exp(B)**	**Cox & Snell R2**
					0.341
Gender	0.210	0.277	0.449	1.233	
Age	0.046	0.072	0.527	1.047	
BIS-11 total scores	0.041	0.013	**0.04**	1.042	
IAT total scores	0.015	0.008	**0.025**	1.015	
RCBI-II-CB scores	0.562	0.084	**<0.001**	1.754	

IAT: Internet Addiciton Test; BIS-11: Barratt Impulsivity Scale- 11; RCBI-II-CB: Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV: Revised Cyberbullying Inventory-II Cybervictimization

4. Discussion

To summarize the findings of this study, significant associations were identified between impulsivity, types of impulsivity, cyberbullying, and cybervictimization when comparing the group with Internet addiction, as determined by IAT total score cutoffs, to the group without Internet addiction. Furthermore, correlation analyses revealed significant positive correlations among Internet addiction, impulsivity, types of impulsivity, cyberbullying, and cybervictimization. Additionally, logistic regression analyses demonstrated that impulsivity had a significant effect on Internet addiction, whereas cyberbullying and cybervictimization did not show such an effect. Moreover, impulsivity, Internet addiction, and cybervictimization were found to have significant effects on cyberbullying, while impulsivity, Internet addiction, and cyberbullying had significant effects on cybervictimization.

Previous studies have similarly reported higher levels of impulsivity among adolescents with Internet addiction compared to their non-addicted peers, aligning with the findings of the present study (38, 39). Regression analysis in this study revealed a significant association between Internet addiction and impulsivity. Based on DSM-IV criteria, some researchers have proposed that Internet addiction represents a disorder related to impulse control (39). Impulsivity is often considered an endophenotype in individuals predisposed to addiction, particularly substance abuse and pathological gambling (40). Internet addiction is characterized by difficulty in regulating internet use, while impulsivity refers to acting hastily without prior thought, reflecting reduced cognitive control. It has been suggested that impulsivity may hinder the inhibition of addictive behaviors (41). Adolescents, being more impulsive and exhibiting weaker self-regulatory skills during this developmental stage, may face a heightened risk of Internet addiction (5). To date, limited research has explored the association between Internet addiction and impulsivity specifically within the adolescent population. In light of this evidence, the findings of this study underscore that impulsivity in adolescents may play a critical role in Internet addiction, with impulsivity traits representing a potential risk factor for developing such addiction. Moreover, this study identified a significant moderate correlation between impulsivity and both cyberbullying and cybervictimization. It was also found that impulsivity had a significant impact on cyberbullying and cybervictimization, indicating that impulsivity serves as a predictor for these situations. These findings corroborate those reported in prior research (42, 43, 44). Given the link between aggression and bullying behavior, much of the research has focused on the impulsivity of bullies. However, studies on victimization have also demonstrated that victims exhibit externalizing behaviors, such as impulsivity (44).

The significant relationship and moderate positive correlation observed between Internet addiction, cyberbullying, and cybervictimization in this study align with findings reported in the literature (7, 45,

46). Furthermore, this study demonstrated that Internet addiction has a significant impact on both cyberbullying and cybervictimization. However, the reverse effect was not observed, as neither cyberbullying nor cybervictimization had a significant influence on Internet addiction. In other words, while Internet addiction predicts cyberbullying and cybervictimization, the opposite does not appear to hold true. This finding, which does not entirely align with the existing literature, suggests that adolescents who engage in cyberbullying or experience cybervictimization may not necessarily have Internet addiction. However, adolescents with Internet addiction are at a higher risk of both perpetrating cyberbullying and being victims of cybervictimization. This supports the findings of other studies in the literature, which indicate that cyberbullying and cybervictimization are influenced by numerous factors, including anxiety, depression, self-esteem, empathy, personality traits, family characteristics, and more (47, 48, 49) . Internet addiction has been identified as a risk factor for both engaging in cyberbullying and experiencing cybervictimization. Several explanations may account for this association. First, excessive Internet use has been shown to correlate with a heightened likelihood of cyberbullying behaviors (50). Second, Internet addiction, often characterized as an "impulse control disorder," has been associated with a broad range of psychosocial issues, including involvement in cyberbullying (51). Third, research has highlighted a connection between cybervictimization and Internet addiction. For instance, a study conducted in China revealed a bidirectional relationship between cybervictimization and Internet use. Lastly, extended online activity (exceeding two hours per day) has been demonstrated to significantly increase the risk of encountering cyberbullying (52). Alim (2017) highlighted that sharing personal information on social media increases an individual's vulnerability to cyberbullying (53). Furthermore, this study identified a strong positive correlation between cyberbullying and cybervictimization, as well as significant effects between them. These findings corroborate those reported in prior research. Lozano-Blasco, Cortés-Pascual, and Latorre-Martínez (2020) reported a moderate positive correlation between cyberbullying and cybervictimization among adolescents (54). Similarly, Brewer and Kerslake (2015) suggested that cybervictimization often results from cyberbullying (48). These findings imply that individuals who experience cyberbullying may develop a tendency to inflict harm on others as a coping mechanism, perceiving bullying as a way to respond to their own victimization.

No prior study in the literature has simultaneously examined Internet addiction, impulsivity, cyberbullying, and cybervictimization among adolescents. This distinction represents a significant strength of the present study. Moreover, this study makes a significant contribution to the literature by providing results that align with previous findings while also enriching the existing body of knowledge through its divergent findings. These differences serve as a foundation for future research, offering valuable guidance for further studies. Future research exploring the interrelationships between these variables could contribute to a deeper understanding of the mechanisms underlying these critical issues in adolescence and aid in the development of effective intervention strategies.

Nonetheless, this study has notable limitations. The key limitations include its cross-sectional design and a relatively small sample size, which hinder the broader applicability of the results. An important limitation of the study is the lack of assessment of participants' sociodemographic characteristics, such as family background, ownership of personal electronic devices (e.g., mobile phones and computers), and academic performance. Additionally, the use of self-reported scales for assessing Internet addiction, impulsivity, cyberbullying, and cybervictimization may introduce bias. Another limitation is the lack of objective intelligence testing to evaluate the mental capacity of the participants. Although exclusion criteria included psychotic disorders, pervasive developmental disorders, and intellectual disabilities, these conditions were not assessed using a semi-structured psychiatric interview such as the Kiddie and Young Adult Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version (K-SADS-PL), but rather based on clinical observation and evaluation in accordance with DSM-5 criteria.

5. Conclusion

In summary, the results of this study revealed significant associations between impulsivity, its various types, cyberbullying, and cybervictimization when comparing the group with Internet addiction (based on IAT total score cutoffs) to the group without Internet addiction. Correlation analyses further showed significant positive relationships among Internet addiction, impulsivity, its types, cyberbullying, and cybervictimization. Additionally,

logistic regression analyses indicated that impulsivity had a significant impact on Internet addiction, while cyberbullying and cybervictimization did not exhibit such an effect. Furthermore, impulsivity, Internet addiction, and cybervictimization were found to significantly influence cyberbullying, while impulsivity, Internet addiction, and cyberbullying had significant effects on cybervictimization. Nevertheless, additional studies are essential to explore the fundamental processes behind Internet addiction, impulsivity, cyberbullying, and cybervictimization, which are commonly observed during adolescence, as well as the relationships among these factors.

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