



RESEARCH ARTICLE

<https://doi.org/10.37093/ijsi.1460112>

Unravelling the Nexus: Cyberbullying, Sleep Quality, and Sleep-Related Impairments on Digital Platforms Among Young Adults

Bahaddin Demirdiř*

Semra Demirdiř**

Abstract

Cyberbullying presents a significant mental health concern on a national scale, particularly among young adults who are native to the digital world. This study explores the intricate dynamics between cyberbullying encounters, sleep quality, and sleep-related impairments among individuals aged 18 to 25. Considering the prevalence of cyberbullying and its negative effects, understanding its nuanced impacts on sleep health becomes imperative. This study used a cross-sectional design with a convenience sample of 105 participants, and quantitative methods were used for data analysis. Logistic regression, multivariate tests, correlation analysis, and moderated mediation analysis were employed to unravel the complex interplay between cyberbullying, demographic factors, and sleep outcomes. Gender and education level were found to be significant predictors of cyberbullying incidents, revealing demographic disparities in victimization. Additionally, sleep quality played a vital role as a mediator in the association between cyberbullying and sleep-related impairments, highlighting the interconnected nature of these variables. Various forms of cyberbullying showed nuanced impacts on both sleep quality and associated impairments, emphasizing the importance of personalized interventions. These results underscore the importance of holistic strategies that incorporate demographic factors and sleep-focused interventions to protect the health and well-being of individuals impacted by cyberbullying.

Keywords: Cyberbullying, sleep quality, sleep-related impairments, young adults

Cite this article: Demirdiř, B., & Demirdiř, S. (2024). Unravelling the nexus: Cyberbullying, sleep quality, and sleep-related impairments on digital platforms among young adults. *International Journal of Social Inquiry*, 17(2), 177–195. <https://doi.org/10.37093/ijsi.1460112>

* Asst. Prof. Dr., Cankiri Karatekin University, Cankiri, Türkiye (Corresponding Author).

Email: bahaddindemirdis@karatekin.edu.tr, ORCID: <https://orcid.org/0000-0001-5843-5072>

** Asst. Prof. Dr., Cankiri Karatekin University, Cankiri, Türkiye.

Email: semrademirdis@karatekin.edu.tr, ORCID: <https://orcid.org/0000-0003-1929-614X>

Article Information

Received 27 March 2024; Revised 06 May 2024; Accepted 14 May 2024; Available online 30 August 2024

This is an open access article under the [Creative Commons Attribution-NonCommercial Licence](https://creativecommons.org/licenses/by-nc/4.0/).
© 2024 The Authors. Published by Institute of Social Sciences on behalf of Bursa Uludağ University



1. Introduction

Since the advent of the Internet, people have increasingly used web platforms to share their ideas and communicate with others. Social media sites (SNS), such as Facebook, X (formerly Twitter), and Instagram, provide a platform for people to create their own content, like pictures and videos, and share it with others (Taprial & Kanwar, 2012). Users also respond to others' posts and join online discussions through SNS. Social media provides an online environment not only for individuals but also for communities and organisations to interact with each other through text messages and media files. Social network sites are the most popular online platforms specifically used by young people (Singh et al., 2020). The total number of global social media users has increased by nearly 30 percent since the beginning of the pandemic, reaching over 1 billion new users in the last 3 years (Kemp, 2023). Social media usage is generally skewed towards the younger demographic (Wong & Bottorff, 2023). In a study conducted by Kemp (2024) examining the 16–64 age group, it was found that individuals aged 16–24 spent more daily time using social media compared to those in other age groups. The use of technology and social media by young people in Türkiye is also increasing rapidly. According to research conducted by the Radio and Television Supreme Council (RTUK), the time spent on the internet by young people between the ages of 15 and 21 is 4 hours and 37 minutes in Türkiye (RTUK, 2022). Research results showed that the time young people spend on the internet is approximately three times more than the time they spend watching television. The results also demonstrated that 94.8% of young people who use the internet also follow social media sites (RTUK, 2022). It highlights that social interaction over new media technologies, or simply SNS, plays a significant role in many young people's lives.

Social media sites can be useful and attractive, especially for young people. However, users can also encounter problems when using these sites. For instance, misuse of these platforms may result in negative consequences, such as cyberbullying (Ali et al., 2018). Unfortunately, cyberbullying has become a common and accepted behavior among young people (Li, 2010). Bullying can be categorized into two types: traditional bullying and cyberbullying. Traditional bullying typically occurs at school or after school, allowing victims to potentially avoid it (Cagirkan & Bilek, 2021). On the contrary, cyberbullying can occur at any place and moment, rendering it challenging for victims to evade (Cagirkan & Bilek, 2021). Cyberbullying is a term generally used to describe the act of harming someone else using media and communication technologies (Peter & Petermann, 2018). Such behavior may include harassing messages sent via text message or the Internet, derogatory comments or images sent via social networking sites, or electronic threats (Willard, 2007; Hinduja & Patchin, 2014). Cyberbullying differs from traditional bullying in that it preserves words and images in a more permanent way yet lacks supervision (Nixon, 2014). Additionally, it is unique in reaching an unlimited audience over time and space. Perpetrators of cyberbullying may not fully grasp the consequences of their actions since they cannot see the faces of their targets (Nixon, 2014), reducing feelings of personal responsibility (Slonje & Smith, 2008).

Cyberbullying has emerged as a significant concern in contemporary society, particularly due to its adverse effects on the mental well-being of young adults. With the widespread

adoption of information and communication technologies, cyberbullying is negatively impacting many young people, both at home and at school (Francisco et al., 2015). Considered a critical public health problem, cyberbullying leads to serious health issues such as depression, anxiety, and suicidality among young individuals (Kwan et al., 2020). Consequently, research on cyberbullying and its consequences for young people has rapidly increased. For instance, a study conducted by Låftman et al. (2013) concluded that Swedish youth who experienced cyberbullying were more likely to suffer from stomach aches, headaches, sleep disturbances, and loss of appetite compared to their non-bullied peers. Additionally, Bonanno and Hymel (2013) demonstrated that cyberbullying was associated with depressive symptoms and suicidal ideation among Canadian young people. Another study focused on Turkish college students revealed that those engaged in cyberbullying experienced symptoms such as anxiety disorders, anger, and concentration problems in schoolwork (Dursun et al., 2020). Previous studies have also highlighted the negative impact of cyberbullying on young adults' sleep quality in various countries, including Canada, Finland, the U.S., and Türkiye (e.g., Nagata et al., 2023; Sampasa-Kanyinga et al., 2022; Ildırım et al., 2017).

2. Cyberbullying: Definitions and Characteristics

Bullying is generally defined as aggressive, intentional actions or behaviors carried out repeatedly over time by a person or group against a victim who is unable to defend themselves (Olweus, 1993). The main forms of bullying can be categorized as "traditional" bullying, including verbal and physical actions where the perpetrator has a direct effect, and rumor spreading, where the perpetrator has an indirect effect (Smith et al., 2008). On the other hand, cyberbullying is a term that has emerged with the digital age and has become a reality of it (Ovejero et al., 2016; Langos, 2012). Although the definition of cyberbullying is similar to traditional bullying, it evolves in many forms, making it difficult to define precisely (Langos, 2012). However, there are some general definitions used to explain this phenomenon. For example, Kowalski et al. (2012) defined cyberbullying as a deliberate and repeated attack in an electronic medium, citing examples such as instant messages, email, blogs, and text messages, against individuals who cannot defend themselves. This definition highlights that while traditional bullying and cyberbullying may share similarities, the use of communication media technologies is crucial in understanding the nature of cyberbullying (Menesini & Nocentini, 2009).

In a similar vein, many researchers have applied traditional bullying characteristics such as repetition, power imbalance, and intent to harm cyberbullying (Alipan et al., 2015). A commonly used definition that combines these three features points out that cyberbullying is: "an aggressive intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself" (Smith et al., 2008, p. 376). These definitions show that most researchers accept that cyberbullying refers to the use of information and communication technologies to bully others. However, it is unclear whether these three features have the same meaning in traditional bullying and cyberbullying actions (Alipan et al., 2015). For example, in terms of repetition, inappropriate photo-taking behavior may occur once, but uploading it to show others via the

Internet could be considered as repetition (Slonje & Smith, 2008). Moreover, in the online context, instead of physical force, some characterize power imbalance as an inconsistency in technological skill, while others argue that this is not a valid characteristic of cyberbullying (Langos, 2012). Additionally, intent to harm is difficult to detect because non-verbal cues like tone of voice and body language in emails, chats, and text messages are absent and can easily be misinterpreted. This may also prevent individuals from realizing that they are actually harming another person (Vandebosch & Van Cleemput, 2009). Therefore, researchers need to break down the definition of cyberbullying into each of these key features. This approach can be useful in representing the perceptions and interpretations of individuals who engage or have the potential to engage in cyberbullying behaviors (Alipan et al., 2015).

Cyberbullying can occur through various mediums such as text messages, email, online gaming, and social media sites, including Instagram, Twitter, and Snapchat (Whittaker & Kowalski, 2015). Launched in 2011, Snapchat is an online platform that allows users to send text, images, and videos for a set period before the content becomes permanently inaccessible (Vaterlaus et al., 2016). Instagram, another social media platform launched in 2011, is particularly popular for sharing photos and videos, boasting over 2 billion users (Hu et al., 2014). In literature, studies focusing on cyberbullying have demonstrated that cyberbullies try to manipulate, humiliate, harass, tease, and intimidate the targeted person in various ways (Beran & Li, 2007; Smith et al., 2008). According to Chisholm (2014), the types of bullying can be listed as follows: Firstly, "flaming" entails a hostile and argumentative style of online communication, predominantly observed in interactions among men. Additionally, "spreading" involves disseminating derogatory insults, threats, or humiliating messages/images to both the targeted individual and the wider online community. "Online slamming" refers to the participation of bystanders in online harassment. Furthermore, cyberbullies may engage in impersonation, posting cruel messages, rumors, and threats through social network profiles, or creating fake pages to ostracize individuals, a behavior known as "relational aggression". Moreover, "shock trolling" entails posting offensive messages or posts in online communities to provoke a reaction by deliberately annoying, angering, or humiliating individuals. "Sexting" involves the dissemination of embarrassing or sexually suggestive images. Finally, cyberbullies may engage in "stalking," where individuals are threatened with violence after being targeted and monitored online.

The impact of demographic factors on cyberbullying remains a subject of noteworthy interest and investigation. Understanding how variables such as age, gender, and education level relate to cyberbullying behaviors can provide valuable insights into its prevalence and dynamics. Firstly, gender emerges as a crucial demographic variable influencing cyberbullying experiences. Research indicates that females are more likely to be victims of cyberbullying, while males tend to engage more in cyberbullying behaviors (Martínez-Pecino & Durán, 2016; Sari & Andriani, 2022). Additionally, age plays a significant role, with younger individuals experiencing higher rates of cyberbullying compared to their older counterparts (Balakrishnan, 2015). Furthermore, specific demographic factors, such as qualification, may also influence engagement in cyberbullying behavior (Sari & Andriani, 2022).

3. The Impact of Cyberbullying on Mental Health

The impacts of cyberbullying can parallel those of traditional bullying but often prove to be more harmful and longer-lasting (Hanewald, 2009). Cyberbullying can manifest in various negative behavioral and psychological consequences for individuals (Smokowski & Kopasz, 2005; Smith et al., 2008), with youth being particularly vulnerable to its effects (Kowalski et al., 2014). Studies exploring the connection between cyberbullying and mental health reveal that 60% of children and adolescents with pre-existing mental health issues were subjected to online bullying within the past year (Hinduja & Patchin, 2019). Research findings from various countries shed light on the prevalence and consequences of cyberbullying (Katzer et al., 2009; Wigderson & Lynch, 2013; Wong et al., 2014; Cagirkan & Bilek, 2021). Current evidence underscores cyberbullying as a significant threat to the health and well-being of youths, manifesting psychologically (e.g., anxiety, depression, anguish, suicidal thoughts), physically (e.g., headaches, sleep disorders, skin problems, eating disorders), and psychosocially (e.g., loneliness, exclusion, and isolation) (Azami & Taremian, 2020; Yang, 2021; Wang et al., 2022).

Cyberbullying is recognized as a significant stressor, with research showing that a substantial portion of cyberbullying victims experience symptoms of stress (Finkelhor et al., 2000). Furthermore, studies have reported increased trauma symptoms among individuals who have been harassed online (Shi et al., 2018). Also, findings from the Second Youth Internet Safety Survey (Ybarra et al., 2006) revealed that a significant percentage of cyberbullying victims reported emotional distress, including extreme sadness, due to online harassment (Ybarra et al., 2006). Additionally, teenagers targeted by cyberbullying often experience heightened feelings of shame, fear, hurt, and self-blame following the incident (Price & Dalglish, 2010).

Moreover, cyber victimization can lead to deterioration in youths' relationships, with victims reporting feeling more isolated from their parents and friends and experiencing increased feelings of helplessness and isolation (Wang et al., 2009). It is not surprising that cyberbullying victims could face challenges in forming friendships, experience peer relationship problems, and demonstrate lower school engagement (Brighi et al., 2012). Additionally, cyberbullying victimization has been linked to an increased risk of depressive behaviors and suicidal tendencies (van Geel et al., 2014). Research suggests that both cyberbullying targets and perpetrators are more likely to consider and attempt suicide compared to their peers with no cyberbullying experience (Hinduja & Patchin, 2010).

Furthermore, victims and perpetrators of cyberbullying may also experience physical health problems, including sleep disturbances, loss of appetite, headaches, and skin problems (Kowalski & Limber, 2013). For instance, a study by Hellström et al. (2017) found a positive association between experiencing cyberbullying and increased physical health problems, such as sleep difficulties, stomach aches, headaches, and loss of appetite, among Swedish teenagers. Particularly for victims, dwelling on victimization or its impacts before bedtime may exacerbate fears of future victimization, leading to sleep disturbances and insomnia (Donoghue & Meltzer, 2018). Nonetheless, the impacts suffered by victims of cyberbullying may vary depending on situational factors, such as the availability of anonymity or the presence of bystanders. For instance, victims may experience heightened anxiety when they are unable to identify their tormentor, fearing that anyone could be the perpetrator (Ovejero et al., 2016).

4. Cyberbullying and Sleep Quality: Exploring Relationships

Cyberbullying experiences have been consistently linked to poor sleep quality and sleep-related impairments among young adults (Sarabadani & Morovati, 2022; Kwon et al., 2020). The impact of cyberbullying on sleep quality is moderated by demographic variables such as gender and age, with females and younger individuals exhibiting a higher susceptibility to sleep-related issues (Schodt et al., 2021; Brown et al., 2022). Moreover, social media use has been identified as a significant moderator in this relationship, highlighting the need to consider technological factors (Schodt et al., 2021). These variables shape individuals' susceptibility to cyberbullying and their subsequent responses, highlighting the importance of considering diverse demographic backgrounds in understanding this phenomenon.

Previous studies have explored the impact of bullying on sleep quality, but limited research has investigated the association between distinct forms of bullying and sleep quality (van Geel et al., 2016). Therefore, it is imperative to investigate how various types of bullying relate to sleep quality among children and adolescents. Mang et al. (2023) uncovered that different forms of bullying exerted diverse effects on sleep quality. Verbal bullying had the most significant negative effect on sleep quality, followed by social bullying, physical bullying, and cyberbullying. This pattern may be attributed to the prevalence of verbal bullying, which outweighed cyberbullying in this demographic. Another plausible rationale for the heightened impact of verbal bullying is its pervasive and enduring nature, potentially inflicting long-term damage to victims' self-esteem and mental well-being. Additionally, individuals subjected to cyberbullying frequently perceive a greater degree of control over the situation compared to victims of conventional forms of bullying (Ortega et al., 2009).

The relationship between cyberbullying experiences, sleep quality, types of cyberbullying, and demographic factors among young adults has been extensively explored in recent literature, shedding light on the complex interplay between individual characteristics and cyberbullying behaviors. Kircaburun and Tosuntař (2018) investigated the associations between cyberbullying perpetration and various factors, including gender, personality traits, chronotype, and sleep quality, among university students in Türkiye. Their results suggested that both chronotype and sleep quality played significant roles in predicting cyberbullying perpetration. Evening-type students presented higher cyberbullying scores compared to those classified as neither-type or morning-type. Furthermore, increased cyberbullying perpetration was linked with poorer sleep quality, males, higher extraversion, higher neuroticism, and lower conscientiousness. Similarly, Liu et al. (2021) examined the bidirectional association between cyberbullying perpetration, sleep quality, and emotional distress among Chinese junior high school students, revealing significant relationships over time between cyberbullying perpetration and sleep quality, as well as between sleep quality and emotional distress. These studies highlight the intricate connections between demographic factors such as gender and personality traits, and cyberbullying perpetration and sleep quality among young adults.

Furthermore, studies have explored the impact of cyber victimization on mental health outcomes, particularly depressive symptoms, and suicidal ideation, emphasizing the mediating role of sleep quality. Kwon et al. (2020) investigated the relationship between cyber victimization, sleep quality, and depressive symptoms among adolescents, uncovering a

significant indirect effect of poor sleep quality on the connection between cyber victimization and depressive symptoms. Transitioning to broader aspects of social media use, Viner et al. (2019) investigated the frequency of social media use and its impact on mental health outcomes, finding that very frequent social media use was associated with increased psychological distress and lower wellbeing, particularly among females. The study also identified cyberbullying, sleep adequacy, and physical activity as mediating factors in the relationship between social media use and mental health outcomes. Adding to this discourse, Zou et al. (2023) investigated the correlation between various types of bullying victimization and suicidal ideation among female students, uncovering notable mediating effects of rumination and insomnia. These findings underscore the complex nature of the relationship between cyberbullying, sleep quality, and mental health outcomes (particularly sleep-related impairments), highlighting the need for comprehensive interventions addressing individual characteristics, types of cyberbullying, and sleep habits to mitigate the adverse effects of cyberbullying among young adults.

In conclusion, the research setting surrounding cyberbullying, sleep quality, and demographic factors among young adults reveals a complex connection with significant implications for intervention strategies and support mechanisms. While previous studies have consistently linked cyberbullying experiences to poor sleep quality and sleep-related impairments, limited research has investigated the nuanced associations between distinct forms of bullying and sleep quality. Furthermore, demographic factors such as gender and personality traits play a crucial role in shaping individuals' susceptibility to cyberbullying perpetration and their subsequent responses. Studies have also highlighted the mediating role of sleep quality in the relationship between cyber victimization and mental health outcomes, underscoring the need for comprehensive interventions addressing individual characteristics and types of cyberbullying to mitigate the adverse effects of cyberbullying among young adults. Moving forward, further research into the complex relationship between these variables is essential to inform targeted interventions and support mechanisms aimed at promoting the well-being of persons affected by cyberbullying.

The current study aims to examine the interplay between cyberbullying experiences, sleep quality and sleep-related impairments among young adults. Specifically, researchers seek to investigate how variables such as gender, age, and education level are associated with the occurrence of cyberbullying incidents. Additionally, the study aims to explore the relationships between cyberbullying experiences, sleep quality, and sleep-related impairments while considering the moderating effects of cyberbullying types. Through comprehensive analyses of these relationships, the researchers aim to contribute to a better understanding of the complex dynamics surrounding cyberbullying and its impact on the sleep health of young adults.

Research questions are:

1. How do demographic factors such as gender, age, and education level relate to the experience of cyberbullying among young adults?
2. What is the relationship between cyberbullying experiences, sleep quality, and sleep-related impairments among young adults, and how are these relationships moderated by types of cyberbullying?

5. Method

5.1 Study Design and Participants

The current study enrolled 125 participants through convenience sampling, targeting young adults aged 18 to 25. Participants were required to confirm their age before accessing the survey, which was administered via Google Forms. Demographic data were collected at the outset of the survey, revealing a female (77.1%) sample, with males comprising 22.9%. The age distribution ranged from 19 to 25 years, with 23 being the most frequently stated age and 19 the least. Moreover, it is noteworthy that 20 participants were excluded from the study due to pre-existing health conditions that could theoretically impact their sleep quality. Employing a cross-sectional design, all data were collected at a single time point through the survey. Quantitative methods were applied, with participants completing a questionnaire addressing cyberbullying, sleep quality, and sleep-related impairments. The study employed moderated mediation analysis to explore the relationship between cyberbullying experiences, sleep quality, sleep-related impairments, types of cyberbullying and demographic variables. Analytical techniques included logistic regression, multivariate tests, tests of between-subjects effects, correlation analysis, and moderated mediation analysis. Logistic regression aimed to predict cyberbullying experiences based on gender, age, and education level, with the model including all variables significantly predicting cyberbullying experiences. Multivariate tests demonstrated significant effects across dependent variables concerning gender and education. Tests of between-subjects effects further examined the influence of gender and education on cyberbullying experiences. Correlation analysis revealed associations between cyberbullying experiences, demographic factors, and sleep-related impairments. Moderated mediation analysis indicated that gender, education level, types of cyberbullying moderate the relationship between cyberbullying and sleep-related impairments. These findings highlight the complexity of cyberbullying experiences and underscore the importance of considering demographic factors and sleep-related outcomes in interventions targeting cyberbullying's adverse effects on well-being.

5.2 Measures

In this study, data were gathered through the administration of a questionnaire. Participants provided demographic information, including their age, gender, and education level. The questionnaire comprised three scales: the first scale assessed cyberbullying experiences (Cyberbullying Scale [CBS]), the second scale evaluated Sleep Quality (SQ), and the final scale measured Sleep-Related Impairments (SRI). To address potential language barriers, the questionnaire was translated into Turkish through a committee approach involving bilingual professionals at Cankiri Karatekin University.

Cyberbullying victimization was measured using a revised version of the Cyberbullying Scale, comprising 12 items, developed by Stewart et al. (2014). The scale evaluates cyberbullying experiences over the past two weeks, with the initial two items focusing on types of cyber victimization and perpetration, including email, text messages, and social media platforms. The remaining 10 items present various scenarios of cyberbullying, prompting

participants to indicate their frequency of exposure on a five-point Likert scale ranging from *never* to *always*. Scores for items 3 through 12 were summed to calculate a total Cyberbullying Scale score, ranging from 10 to 50, where lower scores indicate minimal cyberbullying experiences and higher scores signify more frequent victimization. The selection of this tool was based on its established psychometric properties, evidenced by a Cronbach's α of .94 in the original study (Stewart et al., 2014). The internal consistency of the Turkish version was confirmed with a Cronbach's α of .98 for the study sample.

The short form Sleep Quality and Sleep-Related Impairment scales were meticulously developed through a comprehensive methodology, incorporating literature reviews, qualitative item review, focus groups, cognitive interviewing, and psychometric testing by Yu et al. (2012). To enhance self-reporting on sleep-wake function in adults, PROMIS sleep disturbance and sleep-related impairment item banks were established. According to PROMIS, sleep is characterized as a cyclical state of reduced consciousness and limited interaction with the surroundings, while wakefulness involves active participation with the environment (Buysse et al., 2010). In this study, the adult 8-item PROMIS Sleep Disturbance scale was utilized to gauge self-reported perceptions of sleep quality, depth, and restoration over the past two weeks. This encompasses perceived challenges in falling and staying asleep, along with sleep satisfaction. Additionally, PROMIS Sleep-Related Impairment Scale assessed self-reported alertness, sleepiness, tiredness, and functional impairments associated with sleep problems during waking hours within the past two weeks. Total scores for items were aggregated to derive Sleep Quality and Sleep-Related Impairment scores. Sleep Quality scores range from 0 to 40, with lower scores indicating lesser sleep disturbance and high sleep quality, while Sleep-Related Impairment scores range from 0 to 35, with lower scores indicating less sleep-related impairment. Internal consistency for the Turkish version of the Sleep Quality Scale was confirmed with a Cronbach's α of .82 for the study sample, while for the Sleep-Related Impairment questionnaire, it was .93.

5.3 Data Collection Procedures and Ethical Consideration

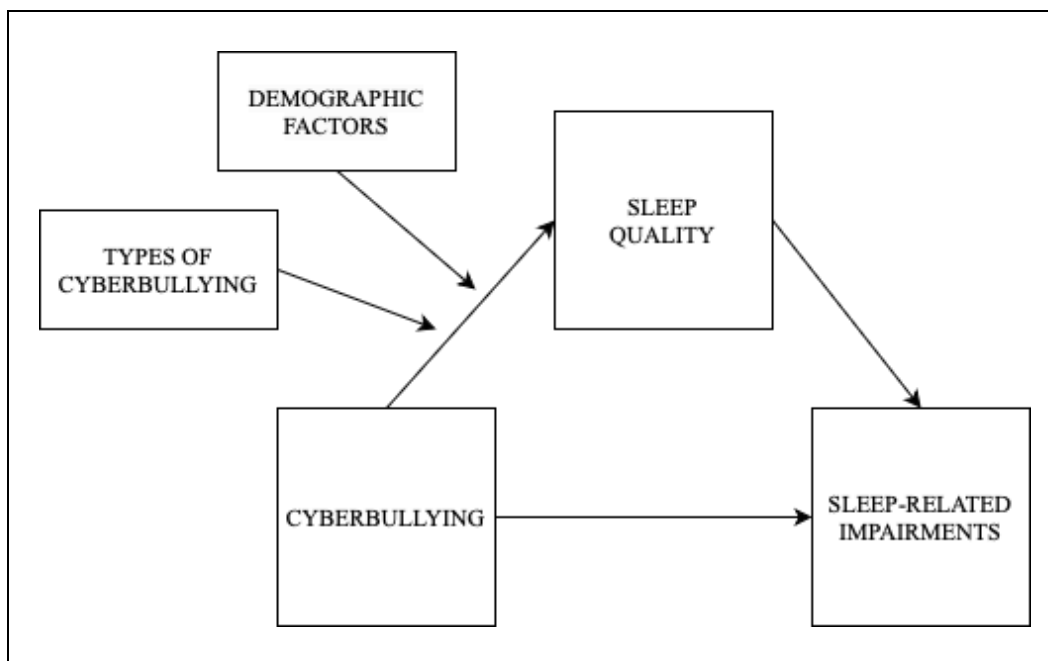
The study started following approval from the Ethics Committee at Cankiri Karatekin University (December 20, 2023/No. 37). Data collection was conducted through an online survey distributed via various social media platforms, including X, Instagram, and WhatsApp, during January 2024. Upon clicking the survey link, participants were presented with an information sheet detailing the study's purpose, the researcher's contact information, and participation requirements. Then, participants were directed to a consent form where they confirmed their age (between 18 and 25), understanding of the provided information, and voluntary agreement to participate by ticking checkboxes. The initial section of the survey consisted of demographic questions regarding age, gender, and education level, which participants were required to complete before proceeding.

5.4 Data Analysis

Data analysis was performed using SPSS, with mediation models examined through the PROCESS macro (Hayes, 2017). Initially, logistic regression was used to predict cyberbullying experiences based on demographic factors and types of cyberbullying. Subsequent multivariate tests explored the effects of gender, education, and age across dependent variables, highlighting the significant impacts of gender and education on cyberbullying experiences. Additional tests of between-subjects effects corroborated the significant influence of gender and education on cyberbullying manifestations. Correlation analysis unveiled notable associations between cyberbullying experiences, demographic factors, and sleep-related impairments, particularly investigating the correlation between cyberbullying and diminished sleep quality. Moderated mediation analysis further explored whether demographic factors and types of cyberbullying moderated the relationship between cyberbullying and sleep-related impairments or not, emphasizing the intricate nature of these connections (see Figure 1). These analyses aimed to investigate the multifaceted aspects of cyberbullying experiences and emphasize the importance of considering demographic factors and sleep-related impairments in interventions aimed at mitigating the adverse effects of cyberbullying on overall well-being.

Figure 1

Model of Moderated Mediation Analysis



6. Results

Descriptive statistics were conducted to analyse both the continuous and categorical variables in this study. The Table 1 provides a summary of participant characteristics in the study. It includes data on gender, age, cyberbullying experience, and education level.

Table 1
Descriptive Statistics for Demographic Variables

Variables	<i>n</i>	%
Gender		
Female	81	77.1
Male	24	22.9
Age		
19	2	1.9
20	5	4.8
21	6	5.7
22	17	16.2
23	31	29.5
24	25	23.8
25	19	18.1
Cyberbullying Experience		
Yes	40	38.1
No	65	61.9
Education		
High School	16	15.2
Bachelor's degree	81	77.1
Master's degree	8	7.6
Platform		
Online Games	7	6.7
Forums, Blogs	2	1.9
Youtube	1	1
Text Messages	6	5.7
X (Twitter)	7	6.7
Facebook	2	1.9
Instagram	11	10.5
Snapchat	3	2.9
Tiktok	1	1.0
None	65	61.9
Types of Cyberbullying		
Flaming	11	10.5
Online Slamming	13	12.4
Relational Aggression	1	1
Sexting	4	3.8
Spreading derogatory content	6	5.7
Other types (cheating, rapping, emoji)	5	4.8
None	65	61.9

Note. *N* = 105. Participants were on average 23.1 years old (*SD* = 1.45).

The logistic regression analysis aimed to predict cyberbullying experiences based on gender, age, and level of education. Individually, none of these variables showed statistical significance in predicting cyberbullying experiences. Gender ($\chi^2 = 3.407$, $df = 1$, $p = .065$), age ($\chi^2 = 2.438$, $df = 1$, $p = .118$), and education level ($\chi^2 = 8.763$, $df = 1$, $p = .003$) did not demonstrate a significant relationship with cyberbullying experiences. However, when all

variables were considered together, the omnibus test yielded a significant result ($\chi^2 = 11.191$, $df = 3$, $p = .011$), indicating that the model with all included variables significantly predicted cyberbullying experiences. As a result, while gender, age, and education level did not individually contribute significantly to predicting cyberbullying experiences, the inclusion of all these variables in the model resulted in a significant prediction. This underscores the importance of considering multiple factors simultaneously in understanding and addressing cyberbullying among young adults. The multivariate tests were conducted to examine the effects across dependent variables (cyberbullying, sleep quality and sleep-related impairments) concerning independent variables (gender, education, and age). The overall multivariate test for the intercept was highly significant, Pillai's Trace: $F(5, 92) = 41.012$, $p < .001$, indicating that the model including all independent variables significantly predicted the combination of dependent variables.

The tests of between-subjects effects indicated significant main effects for some independent variables across the dependent variables. Specifically, gender had a significant effect on the total cyberbullying scale score, $F(1, 96) = 5.118$, $p = .026$, and types of cyberbullying, $F(1, 96) = 5.314$, $p = .023$, while education had significant effects on the total Cyberbullying Scale score, $F(1, 96) = 8.563$, $p = .004$, and types of cyberbullying, $F(1, 96) = 10.071$, $p = .002$. Age did not show significant effects on any of the dependent variables. Overall, the results suggest that gender and education level play significant roles in predicting cyberbullying experiences and its various forms, while age does not seem to have a significant impact in this context. These findings provide valuable insights into the factors associated with cyberbullying and its manifestations.

The correlation analysis conducted in this study unveiled several noteworthy findings regarding the relationships among the variables under investigation. Firstly, concerning demographic characteristics, there was a significant negative correlation between gender and the total score of Cyberbullying Scale ($r = -0.250$, $p < 0.05$), suggesting that individuals identifying as male tended to have lower levels of cyberbullying incidents. The correlation analysis revealed significant associations between total Cyberbullying Scale score, total Sleep Quality score, and total Sleep-Related Impairment score. There was a positive correlation between total Cyberbullying scale score and Sleep Quality score ($r = 0.244$, $p < 0.05$), indicating more sleep disturbance among individuals who experienced cyberbullying, more frequently. Moreover, significant correlations were found between education level and both Cyberbullying Scale score ($r = 0.305$, $p < 0.01$) and Sleep-Related Impairment score ($r = -0.366$, $p < 0.01$), suggesting that individuals with higher levels of education may be more prone to cyberbullying but less likely to experience sleep-related impairments.

A multiple mediation analysis was conducted to investigate the indirect effects of cyberbullying experiences on sleep-related impairments through sleep quality. The results revealed a significant indirect effect of cyberbullying experiences on sleep-related impairments through sleep quality, with a bootstrapped indirect effect estimate of -0.1725 (BootSE = 0.0433, 95% CI $[-0.2696, -0.0980]$), indicating that higher levels of cyberbullying experiences were associated with poor sleep quality (greater sleep disturbance), which in turn predicted increased sleep-related impairments. Additionally, the direct effect of cyberbullying

experiences on sleep-related impairments was not statistically significant (Effect = -0.0665 , $SE = 0.0577$, $t = -1.1525$, $p = .2518$).

Furthermore, the regression analyses indicated that cyberbullying experiences significantly predicted sleep quality, $R^2 = .2154$, $F(1, 103) = 28.2852$, $p < .001$, with a coefficient of -0.2526 ($SE = 0.0475$, $t = -5.3184$, $p < .001$). However, cyberbullying experiences did not significantly predict sleep-related impairments, $R^2 = .3832$, $F(2, 102) = 31.6852$, $p < .001$, with a coefficient of -0.0665 ($SE = 0.0577$, $t = -1.1525$, $p = .2518$). These findings suggest that cyberbullying experiences have an indirect effect on sleep-related impairments through their influence on sleep quality. The result highlights the importance of addressing cyberbullying experiences as a potential risk factor for sleep quality and related impairments, emphasizing the need for interventions aimed at mitigating the negative effects of cyberbullying on youths' sleep health.

A multiple mediation analysis was conducted to examine the indirect effects of cyberbullying types on sleep-related impairments, mediated by sleep quality. The cyberbullying scale scores were examined as predictors, with sleep quality scores as the mediator, and sleep-related impairments scores as the outcome variable. The model accounted for a significant proportion of variance in sleep quality scores: $R^2 = .255$, $F(3, 101) = 11.52$, $p < .001$. Cyberbullying scale scores did not have a significant direct effect on sleep quality ($\beta = -.1477$, $p = .1032$), but the types of cyberbullying (TypeCB) had a significant direct effect ($\beta = 1.0434$, $p = .0274$). Additionally, there was evidence of moderated mediation, with the interaction term (CBS x TypeCB) showing a marginally significant effect ($\beta = -.0387$, $p = .2203$).

The conditional indirect effects of cyberbullying types on sleep-related impairments were examined. For the types of cyberbullying involving flaming, the indirect effect through sleep quality was $-.0404$ (BootSE = $.0515$, BootLLCI = $-.1482$, BootULCI = $.0594$). For online slamming, the indirect effect was $-.1009$ (BootSE = $.0652$, BootLLCI = $-.2317$, BootULCI = $.0222$), and for cyberbullying involving spreading derogatory content, the indirect effect was $-.1421$ (BootSE = $.0871$, BootLLCI = $-.3212$, BootULCI = $.0240$). The index of moderated mediation was $-.0264$ (BootSE = $.0193$, BootLLCI = $-.0684$, BootULCI = $.0087$), suggesting that the strength of the indirect effect varied depending on the types of cyberbullying.

A sample was used to investigate the model, which included Sleep-Related Impairment as the outcome variable, Cyberbullying Scale as the predictor, Sleep Quality as the moderator, and gender as the covariate. The model revealed a significant overall fit for predicting Sleep Quality ($R = .4764$, $R^2 = .2269$, $p < .001$), with Cyberbullying Scale demonstrating a significant negative effect (coeff = $-.1699$, $p = .0472$) and gender exhibiting a non-significant influence (coeff = $.2456$, $p = .8639$). Moreover, conditional indirect effects analysis unveiled a moderated mediation effect indexed by gender ($-.0866$, BootSE = $.0713$, BootLLCI = $-.2282$, BootULCI = $.0516$), indicating nuanced interactions between the variables. Bootstrap results reinforced the significance of Cyberbullying Scale scores and the negligible impact of gender on the examined constructs.

Considering age as the covariate, the results demonstrate that Sleep Quality significantly predicts Sleep-Related Impairment, as evidenced by a substantial R^2 value of $.3832$ and a significant F-statistic: $F(2, 102) = 31.6852$, $p < .000$. However, the direct effect of Cyberbullying scale on Sleep-Related Impairment was not statistically significant ($b = -.0665$, $SE = .0577$, $t =$

-1.1525, $p = .2518$). Furthermore, the examination of conditional indirect effects across different age groups suggests that none of the indirect effects were statistically significant: -1.4473: -.1684 (BootSE = .0545), 0.0000: -.1723 (BootSE = .0454), 1.4473: -.1763 (BootSE = .0548). Therefore, within this sample, there is no compelling evidence to indicate that the relationship between cyberbullying experiences, sleep quality, and sleep-related problems varies by age.

Considering education level as the covariate, for the outcome variable Sleep Quality, the model summary revealed a significant relationship ($R = .4720$, $R^2 = .2228$, $p < .001$), with Cyberbullying scale demonstrating a negative coefficient (-.2636, $p < .001$) and education level showing a non-significant coefficient (.6298, $p = .6361$). The interaction term (CBS x Education Level) did not yield significance ($p = .3515$), indicating no conditional effects. Visualisation of the conditional effect was provided through a scatterplot, depicting the relationship between Cyberbullying scale and Sleep Quality across different education levels. For the outcome variable Sleep-Related Impairment, the model summary indicated a substantial relationship ($R = .6190$, $R^2 = .3832$, $p < .001$) with a significant coefficient for Sleep Quality (.6831, $p < .001$). The analysis further explored direct and conditional indirect effects, suggesting that the indirect effect of Cyberbullying scale on Sleep-Related Impairment through Sleep Quality varied across different education levels. The indirect effects varied across different education levels, with lower levels showing slightly stronger indirect effects compared to higher levels. These findings suggest that while bullying frequency directly affects sleep quality and sleep-related impairments, the indirect effects through sleep quality are influenced by education level, albeit marginally.

7. Discussion

The current study contributes to the existing literature by further exploring the intricate relationship between cyberbullying experiences, sleep quality, and sleep-related impairments among young adults aged 18 to 25, shedding light on both expected patterns and unexpected nuances. Building upon the established definitions and characteristics of cyberbullying, the results provide valuable insights into the complex interplay between these variables and have several important implications for understanding and addressing the impact of cyberbullying on sleep health.

The findings of the current study align with existing literature, emphasizing the negative association between cyberbullying experiences and sleep quality (Landoll et al., 2015). However, this study extends prior research by elucidating the mediating role of sleep quality in the relationship between cyberbullying and sleep-related impairments, enriching our understanding of the mechanisms underlying these phenomena. Additionally, the differential effects of demographic factors on cyberbullying experiences and sleep outcomes are consistent with previous findings (Smith et al., 2008). The current study contributes by highlighting the nuanced interplay between demographic variables, cyberbullying, and sleep health among young adults, emphasizing the need for tailored interventions that account for these complexities.

In the current study, a significant finding emerged regarding the substantial influence of gender and education level on cyberbullying experiences among young adults. Consistent with prior studies, the findings show gender and education level as significant influencers of cyberbullying experiences within the young adult demographic (Martínez-Pecino & Durán, 2016; Sari & Andriani, 2022). Females and individuals with higher education levels report elevated incidences of cyberbullying, highlighting the demographic disparities in cyberbullying victimization observed in previous research (Smith et al., 2008). However, the lack of significance for age in the current study emphasizes the widespread vulnerability to cyberbullying across different stages of young adulthood.

While direct prediction of sleep-related impairments by cyberbullying was not observed, its impact was mediated by sleep quality, suggesting avenues for intervention targeting sleep disturbances to mitigate the consequences of cyberbullying on daily functioning. Furthermore, cyberbullying experiences were found to indirectly influence sleep-related impairments through their mediation of sleep quality, emphasizing the importance of understanding the relationship between cyberbullying and sleep health. In line with previous studies, cyberbullying experiences exhibit a robust negative association with sleep quality, indicating that higher levels of cyberbullying correlate with poorer sleep quality (Landoll et al., 2015). This emphasizes the detrimental effect of cyberbullying on sleep health among young adults, consistent with findings from previous studies (Sarabadani & Morovati, 2022; Kwon et al., 2020). Furthermore, while cyberbullying does not directly predict sleep-related impairments, its effect is mediated by sleep quality, addressing cyberbullying's detrimental effects on sleep quality may alleviate subsequent impairments, highlighting the importance of holistic approaches to well-being interventions.

The results also reveal nuanced effects of different types of cyberbullying on sleep quality, highlighting the need for tailored interventions targeting specific cyberbullying behaviors. The analysis highlights the diverse pathways through which cyberbullying behaviors influence sleep health. While certain types of cyberbullying, such as flaming and spreading derogatory content, were found to have significant indirect effects on sleep-related impairments through sleep quality, other types did not demonstrate a significant impact. This emphasizes the need for tailored interventions that target specific forms of cyberbullying to effectively mitigate their effects on sleep health.

8. Conclusion

The current study provides valuable insights into the intricate nexus between cyberbullying experiences, sleep quality, and sleep-related impairments among young adults. By clarifying demographic disparities, mediating mechanisms, and nuanced effects of cyberbullying types, the current study contributes to understanding the multifaceted impact of cyberbullying on sleep health. Recognizing the complex interplay between these variables underscores the importance of comprehensive approaches to addressing cyberbullying and its consequences for sleep health. Moving forward, further research into the complex relationship between these variables is crucial to inform targeted interventions and support mechanisms aimed at

promoting the well-being of persons affected by cyberbullying, echoing previous calls for comprehensive approaches.

The implications of the study for research and practice are varied. Interventions targeting cyberbullying's adverse effects should prioritize addressing sleep disturbances, considering them as integral components of comprehensive well-being interventions. Future research avenues may discover potential moderators or mediators of the cyberbullying-sleep relationship, employing longitudinal designs to unveil long-term effects and assess the effectiveness of comprehensive intervention strategies. Despite the study's contributions, limitations should be admitted, including employing convenience sampling, the disproportionate distribution of male and female participants and reliance on self-reported measures, which limit generalisability and introduce response bias, respectively. Future research could mitigate these limitations through diverse sampling methods and objective measures.

ACKNOWLEDGEMENT

—


FUNDING


No financial support was received from any person or institution for the study.

ETHICS

The authors declare that this article complies with ethical standards and rules. Ethics committee approval was received for this study from the Çankırı Karatekin University Ethical Committee of the Faculty of Science, Mathematics, and Social Sciences (Approval decision full date: December 20, 2023, Decision number: 37).

AUTHOR CONTRIBUTION

Bahaddin Demirdiř  | Concept/idea; Literature review; Design; Drafting; Data collection/analysis; Interpretation of data/findings; Funding; Final approval and accountability. General contribution rate: 50%

Semra Demirdiř  | Concept/idea; Design; Data collection/analysis; Interpretation of data/findings; Supervising; Critical review; Funding; Final approval and accountability. General contribution rate: 50%

CONFLICT OF INTEREST

The authors declare no conflict of interest.

References

- Ali, W. N. H. W., Mohd, M., & Fauzi, F. (2018, November). Cyberbullying detection: An overview. In 2018 Cyber Resilience Conference (CRC) (pp. 1-3). IEEE.
- Alipan, A., Skues, J., Theiler, S., & Wise, L. (2015). Defining cyberbullying: A multiple perspectives approach. *Annual Review of Cybertherapy and Telemedicine* 2015, 15, 9-13.
- Azami, M. S., & Taremian, F. (2020). Victimization in traditional and cyberbullying as risk factors for substance use, self-harm and suicide attempts in high school students. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, 8(1), 101-109. <https://doi.org/10.21307/sjcapp-2020-010>
- Balakrishnan, V. (2015). Cyberbullying among young adults in Malaysia: The roles of gender, age and Internet frequency. *Computers in Human Behavior*, 46, 149-157. <https://doi.org/10.1016/j.chb.2015.01.021>
- Beran, T., & Li, Q. (2007). The relationship between cyberbullying and school bullying. *The Journal of Student Wellbeing*, 1(2), 15-33. <https://doi.org/10.21913/JSW.v1i2.172>
- Bonanno, R. A., & Hymel, S. (2013). Cyber bullying and internalizing difficulties: Above and beyond the impact of traditional forms of bullying. *Journal of Youth and Adolescence*, 42(5), 685–697. <https://doi.org/10.1007/s10964-013-9937-1>
- Brighi, A., Melotti, G., Guarini, A., Genta, M. L., Ortega, R., Mora-Merchán, J., Smith, P. K., & Thompson, F. (2012). Self-Esteem and loneliness in relation to cyberbullying in three European Countries. In *Cyberbullying in the global playground* (pp. 32-56). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781119954484.ch3>

- Brown, C., Beardslee, J., Frick, P., Steinberg, L., & Cauffman, E. (2022). Perceived sleep quality predicts aggressive offending in adolescence and young adulthood. *Journal of Child Psychology and Psychiatry*, 64(2), 320-328. <https://doi.org/10.1111/jcpp.13646>
- Buysse, D. J., Yu, L., Moul, D. E., Germain, A., Stover, A., Dodds, N. E., Johnston, K. L., Shablesky-Cade, M. A., & Pilkonis, P. A. (2010). Development and validation of patient-reported outcome measures for sleep disturbance and sleep-related impairments. *Sleep*, 33(6), 781-792. <https://doi.org/10.1093/sleep/33.6.781>
- Cagirkan, B., & Bilek, G. (2021). Cyberbullying among Turkish high school students. *Scandinavian Journal of Psychology*, 62(4), 608-616. <https://doi.org/10.1111/sjop.12720>
- Chisholm, J. F. (2014). Review of the status of cyberbullying and cyberbullying prevention. *Journal of information systems education*, 25(1), 77.
- Donoghue, C., & Meltzer, L. J. (2018). Sleep it off: Bullying and sleep disturbances in adolescents. *Journal of Adolescence*, 68, 87-93. <https://doi.org/10.1016/j.adolescence.2018.07.012>
- Dursun, S., Gökçe, A., & Aytac, S. (2020). Siber zorbalik: Üniversite öğrencileri üzerine bir araştırma [Cyber bullying: A research on university students]. *International Journal of Social Inquiry*, 13(2), 465-485. <https://doi.org/10.37093/ijsi.837694>
- Finkelhor, D., Mitchell, K. J., & Wolak, J. (2000). *Online victimization: A report on the nation's youth*. National Center for Missing and Exploited Children Bulletin - #6-00-020. Alexandria, VA.
- Francisco, S. M., Veiga Simão, A. M., Ferreira, P. C., & Martins, M. J. das D. (2015). Cyberbullying: The hidden side of college students. *Computers in Human Behavior*, 43, 167-182. <https://doi.org/10.1016/j.chb.2014.10.045>
- Hanewald, R. (2009). Cyberbullying research: The current state. *Australian Educational Computing: Journal of the Australian Council for Computers in Education*, 24(1), 10-15.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.
- Hellström, L., Beckman, L., & Hagquist, C. (2017). Does the strength of the association between peer victimization and psychosomatic health problems depend on whether bullying or peer aggression is measured? *Child Indicators Research*, 10(2), 447-459. <https://doi.org/10.1007/s12187-016-9390-2>
- Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research*, 14(3), 206-221. <https://doi.org/10.1080/13811118.2010.494133>
- Hinduja, S., & Patchin, J. W. (2014). *Bullying beyond the schoolyard: Preventing and responding to cyberbullying*. Corwin Press.
- Hinduja, S., & Patchin, J. W. (2019). Connecting adolescent suicide to the severity of bullying and cyberbullying. *Journal of School Violence*, 18(3), 333-346. <https://doi.org/10.1080/15388220.2018.1492417>
- Hu, Y., Manikonda, L., & Kambhampati, S. (2014). What we instagram: A first analysis of instagram photo content and user types. *Proceedings of the International AAAI Conference on Web and Social Media*, 8(1), 595-598. <https://doi.org/10.1609/icwsm.v8i1.14578>
- Ildırım, E., Çalıcı, C., & Erdoğan, B. (2017). Psychological correlates of cyberbullying and cyber-victimization. *International Journal of Human and Behavioral Science*, 3(2), 7-21. <https://doi.org/10.19148/ijhbs.365829>
- Katzer, C., Fetchenhauer, D., & Belschak, F. (2009). Cyberbullying: Who are the victims?: A comparison of victimization in internet chatrooms and victimization in school. *Journal of Media Psychology: Theories, Methods, and Applications*, 21(1), 25-36. <https://doi.org/10.1027/1864-1105.21.1.25>
- Kemp, S. (2023, January 26). *Digital 2023: Global overview report*. DataReportal. <https://datareportal.com/reports/digital-2023-global-overview-report>
- Kemp, S. (2024, January 31). *The time we spend on social media*. <https://datareportal.com/reports/digital-2024-deep-dive-the-time-we-spend-on-social-media>
- Kircaburun, K., & Tosuntaş, Ş. B. (2018). Cyberbullying perpetration among undergraduates: Evidence of the roles of chronotype and sleep quality. *Biological Rhythm Research*, 49(2), 247-265. <https://doi.org/10.1080/02723646.2017.1352918>
- Kowalski, R. M., & Limber, S. P. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *Journal of Adolescent Health*, 53(1), 13-20. <https://doi.org/10.1016/j.jadohealth.2012.09.018>
- Kowalski, R. M., Limber, S. P., & Agatston, P. W. (2012). *Cyberbullying: Bullying in the digital age*. John Wiley & Sons.
- Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattanner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin*, 140(4), 1073-1137. <https://doi.org/10.1037/a0035618>
- Kwan, I., Dickson, K., Richardson, M., MacDowall, W., Burchett, H., Stansfield, C., Brunton, G., Sutcliffe, K., & Thomas, J. (2020). Cyberbullying and children and young people's mental health: A systematic map of systematic reviews. *Cyberpsychology, Behavior, and Social Networking*, 23(2), 72-82. <https://doi.org/10.1089/cyber.2019.0370>
- Kwon, M., Seo, Y. S., Nickerson, A. B., Dickerson, S. S., Park, E., & Livingston, J. A. (2020). Sleep quality as a mediator of the relationship between cyber victimization and depression. *Journal of Nursing Scholarship*, 52(4), 416-425. <https://doi.org/10.1111/jnu.12569>
- Låftman, S. B., Modin, B., & Östberg, V. (2013). Cyberbullying and subjective health: A large-scale study of students in Stockholm, Sweden. *Children and Youth Services Review*, 35(1), 112-119. <https://doi.org/10.1016/j.childyouth.2012.10.020>

- Landoll, R. R., La Greca, A. M., Lai, B. S., Chan, S. F., & Herge, W. M. (2015). Cyber victimization by peers: Prospective associations with adolescent social anxiety and depressive symptoms. *Journal of Adolescence*, 42(1), 77–86. <https://doi.org/10.1016/j.adolescence.2015.04.002>
- Langos, C. (2012). Cyberbullying: The challenge to define. *Cyberpsychology, Behavior, and Social Networking*, 15(6), 285–289. <https://doi.org/10.1089/cyber.2011.0588>
- Li, Q. (2010). Cyberbullying in high schools: A study of students' behaviors and beliefs about this new phenomenon. *Journal of Aggression, Maltreatment & Trauma*, 19(4), 372–392. <https://doi.org/10.1080/10926771003788979>
- Liu, C., Liu, Z., & Yuan, G. (2021). Associations between cyberbullying perpetration, sleep quality, and emotional distress among adolescents: A two-wave cross-lagged analysis. *The Journal of Nervous and Mental Disease*, 209(2), 123–127. <https://doi.org/10.1097/nmd.0000000000001267>
- Mang, L., Huang, N., Liu, X., Zhen, C., & Guo, J. (2023). The interaction effects of social support and four types of bullying on sleep quality in Chinese adolescents. *Journal of Affective Disorders*, 341, 119–127. <https://doi.org/10.1016/j.jad.2023.08.092>
- Martínez-Pecino, R., & Durán, M. (2019). I love you but I cyberbully you: The role of hostile sexism. *Journal of Interpersonal Violence*, 34(4), 812–825. <https://doi.org/10.1177/0886260516645817>
- Menesini, E., & Nocentini, A. (2009). Cyberbullying definition and measurement: Some critical considerations. *Zeitschrift für Psychologie/Journal of Psychology*, 217(4), 230–232. <https://doi.org/10.1027/0044-3409.217.4.230>
- Nagata, J. M., Yang, J. H., Singh, G., Kiss, O., Ganson, K. T., Testa, A., Jackson, D. B., & Baker, F. C. (2023). Cyberbullying and sleep disturbance among early adolescents in the U.S. *Academic Pediatrics*, 23(6), 1220–1225. <https://doi.org/10.1016/j.acap.2022.12.007>
- Nixon, C. L. (2014). Current perspectives: The impact of cyberbullying on adolescent health. *Adolescent Health, Medicine and Therapeutics*, 5, 143–158. <https://doi.org/10.2147/AHMT.S36456>
- Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Blackwell.
- Ortega, R., Elipe, P., Mora-Merchán, J. A., Calmaestra, J., & Vega, E. (2009). The emotional impact on victims of traditional bullying and cyberbullying: A study of Spanish adolescents. *Zeitschrift für Psychologie/Journal of Psychology*, 217(4), 197–204. <https://psycnet.apa.org/doi/10.1027/0044-3409.217.4.197>
- Ovejero, A., Yubero, S., Larrañaga, E., de la V. Moral, M. (2016). Cyberbullying: Definitions and facts from a psychosocial perspective. In R. Navarro, S. Yubero & E. Larrañaga (Eds.), *Cyberbullying across the globe: Gender, family, and mental health* (pp. 1–31). Springer. https://doi.org/10.1007/978-3-319-25552-1_1
- Peter, I. K., & Petermann, F. (2018). Cyberbullying: A concept analysis of defining attributes and additional influencing factors. *Computers in Human Behavior*, 86, 350–366. <https://doi.org/10.1016/j.chb.2018.05.013>
- Price, M., & Dagleish, J. (2010). Cyberbullying: Experiences, impacts and coping strategies as described by Australian young people. *Youth Studies Australia*, 29(2), 51–59.
- RTÜK. (2022). *Gençlerin medya kullanımı ve dijital okuryazarlık araştırması* [Media usage and digital literacy research among youth]. https://www.rtuk.gov.tr/Media/FM/Kamuoyu/genclerin_medya_kullanimi_ve_dijital_okuryazarlik_arastirmasi_pdf
- Sampasa-Kanyinga, H., Lien, A., Hamilton, H. A., & Chaput, J.-P. (2022). Canadian 24-h Movement Guidelines, life stress, and self-esteem among adolescents. *Frontiers in Public Health*, 10, 702162. <https://doi.org/10.3389/fpubh.2022.702162>
- Sarabadani, E., & Morovati, Z. (2022). Comparison of psychological problems and sleep quality in two groups of cyberbullying victims and normal people. *Iranian Evolutionary Educational Psychology Journal*, 4(1), 103–114. <http://dx.doi.org/10.52547/ieepj.4.1.103>
- Sari, B. L., & Adriani, Y. (2022). Empathy as a mediator of the effect of dark triad personality, social support, and demographic factors on cyberbullying behavior in SMAN 10 Depok Students. *TAZKIYA Journal of Psychology*, 10(2), 123–131. <https://doi.org/10.15408/tazkiya.v10i2.24988>
- Schodt, K. B., Quiroz, S. I., Wheeler, B., Hall, D. L., & Silva, Y. N. (2021). Cyberbullying and mental health in adults: The moderating role of social media use and gender. *Frontiers in Psychiatry*, 12, 674298. <https://doi.org/10.3389/fpsy.2021.674298>
- Shi, P., Ren, H., Li, H., & Dai, Q. (2018). Maternal depression and suicide at immediate prenatal and early postpartum periods and psychosocial risk factors. *Psychiatry Research*, 261, 298–306. <https://doi.org/10.1016/j.psychres.2017.12.085>
- Singh, S., Thapar, V., & Bagga, S. (2020). Exploring the hidden patterns of cyberbullying on social media. *Procedia Computer Science*, 167, 1636–1647. <https://doi.org/10.1016/j.procs.2020.03.374>
- Slonje, R., & Smith, P. K. (2008). Cyberbullying: Another main type of bullying? *Scandinavian Journal of Psychology*, 49(2), 147–154. <https://doi.org/10.1111/j.1467-9450.2007.00611.x>
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4), 376–385. <https://doi.org/10.1111/j.1469-7610.2007.01846.x>
- Smokowski, P. R., & Kopasz, K. H. (2005). Bullying in school: An overview of types, effects, family characteristics, and intervention strategies. *Children & Schools*, 27(2), 101–110. <https://doi.org/10.1093/cs/27.2.101>
- Stewart, R. W., Drescher, C. F., Maack, D. J., Ebesutani, C., & Young, J. (2014). The development and psychometric investigation of the Cyberbullying Scale. *Journal of Interpersonal Violence*, 29(12), 2218–2238. <https://doi.org/10.1177/0886260513517552>

- Taprial, V., & Kanwar, P. (2012). *Understanding social media*. Bookboon, Ventus Publishing.
- van Geel, M., Goemans, A., & Vedder, P. H. (2016). The relation between peer victimization and sleeping problems: A meta-analysis. *Sleep Medicine Reviews*, 27, 89-95. <https://doi.org/10.1016/j.smrv.2015.05.004>
- van Geel, M., Vedder, P., & Tanilon, J. (2014). Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: A meta-analysis. *JAMA Pediatrics*, 168(5), 435-442. <https://doi.org/10.1001/jamapediatrics.2013.4143>
- Vandebosch, H., & Van Cleemput, K. (2009). Cyberbullying among youngsters: Profiles of bullies and victims. *New Media & Society*, 11(8), 1349-1371. <https://doi.org/10.1177/1461444809341263>
- Vaterlaus, J. M., Barnett, K., Roche, C., & Young, J. A. (2016). "Snapchat is more personal": An exploratory study on Snapchat behaviors and young adult interpersonal relationships. *Computers in Human Behavior*, 62, 594-601. <https://doi.org/10.1016/j.chb.2016.04.029>
- Viner, R. M., Gireesh, A., Stiglic, N., Hudson, L. D., Goddings, A. L., Ward, J. L., & Nicholls, D. E. (2019). Roles of cyberbullying, sleep, and physical activity in mediating the effects of social media use on mental health and wellbeing among young people in England: A secondary analysis of longitudinal data. *The Lancet Child & Adolescent Health*, 3(10), 685-696. [https://doi.org/10.1016/S2352-4642\(19\)30186-5](https://doi.org/10.1016/S2352-4642(19)30186-5)
- Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *Journal of Adolescent Health*, 45(4), 368-375. <https://doi.org/10.1016/j.jadohealth.2009.03.021>
- Wang, W., Chen, Z., & Ding, X. (2022). Cyberbullying victimization and disordered eating behaviors: the mediating roles of self-compassion and self-objectification. *Appetite*, 178, 106267. <https://doi.org/10.1016/j.appet.2022.106267>
- Whittaker, E., & Kowalski, R. M. (2015). Cyberbullying via Social media. *Journal of School Violence*, 14(1), 11-29. <https://doi.org/10.1080/15388220.2014.949377>
- Wigderson, S., & Lynch, M. (2013). Cyber-and traditional peer victimization: Unique relationships with adolescent well-being. *Psychology of Violence*, 3(4), 297-309. <https://psycnet.apa.org/doi/10.1037/a0033657>
- Willard, N. E. (2007). *Cyberbullying and cyberthreats: Responding to the challenge of online social aggression, threats, and distress*. Research press.
- Wong, D. S., Chan, H. C. O., & Cheng, C. H. (2014). Cyberbullying perpetration and victimization among adolescents in Hong Kong. *Children and Youth Services Review*, 36, 133-140. <https://doi.org/10.1016/j.childyouth.2013.11.006>
- Wong, B., & Bottorff, C. (2023, May 18). Top social media statistics and trends of 2024. Forbes. <https://www.forbes.com/advisor/business/social-media-statistics>
- Yang, F. (2021). Coping strategies, cyberbullying behaviors, and depression among Chinese netizens during the COVID-19 pandemic: A web-based nationwide survey. *Journal of Affective Disorders*, 281, 138-144. <https://doi.org/10.1016/j.jad.2020.12.023>
- Ybarra, M. L., Mitchell, K. J., Wolak, J., & Finkelhor, D. (2006). Examining characteristics and associated distress related to Internet harassment: Findings from the Second Youth Internet Safety Survey. *Pediatrics*, 118(4), e1169-e1177. <https://doi.org/10.1542/peds.2006-0815>
- Yu, L., Buysse, D. J., Germain, A., Moul, D. E., Stover, A., Dodds, N. E., Johnston, K. L., & Pilkonis, P. A. (2012). Development of short forms from the PROMIS™ sleep disturbance and sleep-related impairment item banks. *Behavioral Sleep Medicine*, 10(1), 6-24. <https://www.tandfonline.com/doi/abs/10.1080/15402002.2012.636266>
- Zou, H., Huang, J., Zhang, W., Wu, J., Wu, W., & Huo, L. (2023). The effect of cyberbullying victimization and traditional bullying victimization on suicidal ideation among Chinese female college students: The role of rumination and insomnia. *Journal of Affective Disorders*, 340, 862-870. <https://doi.org/10.1016/j.jad.2023.08.099>