

Exploring the Psychological Impact of Cyberbullying on Adolescent Mental Health

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Abstract: This study investigated the psychological impact of cyberbullying on adolescent mental health using a quantitative approach. Responses from 384 teenagers to a validated questionnaire, which included Likert-scale questions measuring cyberbullying experiences, cyberbullying witness experiences, and degrees of self-esteem, anxiety, and melancholy, were gathered. The poll was disseminated online using fintech lending platforms, Google Forms, and email to provide broad accessibility. For statistical analysis, SPSS was used, and AMOS was employed for structural equation modeling (SEM), which assessed the proposed correlations between the variables. According to the research, anxiety functioned as a mediator between depression and cyberbullying, and cyberbullying had negative effects on teenage mental health. The wider societal effect of cyberbullying was further shown by the fact that adolescents who witnessed it were more likely to have depressive symptoms. Self-esteem proved to be a significant moderating element that lessened the negative impact of cyberbullying on anxiety. The findings suggested comprehensive anti-cyberbullying initiatives targeting bystanders, as well as victims and offenders. It promoted peer support mechanisms and secure online environments for educational institutions and digital platforms. Reducing the psychological damage caused by cyberbullying required focused mental health programs that strengthened teenagers' emotional resilience and self-esteem. In order to protect teenage mental health, the study emphasized the urgent need for collaboration between parents, schools, and legislators.

Keywords: Cyberbullying, Adolescent Mental Health, Anxiety, Depression, Witnessing Cyberbullying, Self-Esteem

1. Introduction

The use of electronic media with the goal to injure, humiliate, suffer, terrify, and depress the victim of violence is known as cyberbullying. Email, chat rooms, online voting booths, mobile phones, and instant messaging may all be used for these purposes (Smith et al., 2008). According to studies, 20–40% of kids will suffer cyberbullying at least once while they are in adolescence, and the number of cyber victims is rising. The types of attack of cyberbullying behaviors can be classified into four categories and are based on the manner of attack: (1) written/verbal assaults, including emails, text messages, and phone calls; (2) visual assaults, including sharing a humiliating image/photo; (3) impersonation, which is a relatively more complex type of attack whereby the bully impersonates another person to disclose personal information through the other person's account (not without some social context here, of

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course); and (4) exclusion, which is the intentional act of leaving someone out of a group or social interaction. As cyberbullying occurs in a virtual environment, free speech is permitted, and it may access a larger crowd than conventional bullying, lacking social order. Furthermore, deleting content from a website is challenging. According to Dehue et al. (2008), an assault would be intentional, recurrent, and result in mental distress in order to qualify as "cyberbullying." Cyberbullying often targets a victim's social reputation, and therefore recognizes consequences that can be even worse than that of traditional bullying. Victims of cyberbullying were also related to numerous social and behavioral issues. This research aimed to research and evaluate the connection between teenagers' mental health issues and their experiences in connection with cyberbullying (Suzuki et al., 2012).

Bullying is a kind of aggression that jeopardizes a person's wellbeing. It is characterised by persistent aggression and a power disparity that benefits the perpetrator. The conventional type of bullying has evolved into cyberbullying arising from the rapid advancement of information and communication technology. According to Hinduja & Patchin (2012), it is described as "wilful and repeated harm inflicted through the use of computers, cell phones, and other electronic devices."

According to Burton et al. (2013), there are four classifications of people who take part in cyberbullying: cyberbullies, cyber victims, cyberbullies and victims, and those who have neither engaged in cyberbullying nor been cyber victimised. According to the incidence of cyberbullying among teenagers, it varies greatly, ranging from 6% to 75%. According to, India ranks third with 53% of youngsters being harassed online, after China and Singapore. Additionally, one out of every four Indian teenagers' experiences cyberbullying (Van Geel et al., 2014).

Cyberbullying can occur in various technology contexts. It includes disclosure of personal information in public, sending offensive or threatening messages, leaving disparaging remarks on websites or social networking sites, physically threatening as well as intimidating someone in various online contexts, making websites with content and uploading images requesting ratings from others without the consent of an individual, harassing someone online by cruelly teasing them, calling them offensive names, purposefully excluding them from events, threatening them and saying inappropriate sexually suggestive things, etc. (Baruah et al., 2017). In American society, adolescents are increasingly utilising the Internet as a "primary and necessary" form of communication (cyber immersion) as opposed to an "extra" in daily interactions (cyber use) (Englander, 2012). 95% of teenagers have access to the Internet. A novel and potentially destructive dynamic for social connections has been introduced by the transition from in-person to virtual contact; this dynamic has recently been examined in the literature as cyberbullying and Internet harassment (Lenhart et al., 2011). Cyberbullying is often defined as the intentional use of technology to harm others, such as posting hurtful comments on social media, sending hateful texts or messages online, posting embarrassing photos, and sending messages or threats electronically. For adolescents, cyberbullying is common, expected and an accepted occurrence (Baker & Helm, 2010). Furthermore, due to the nature of the medium and lack of real-time feedback, cyberbullies do not see the reactions of the victim. This lack of immediate feedback makes it easier to trivialize, deny or distance oneself from the action and suffering of this harm and diminishes their feelings of personal

responsibility and accountability. This may be described in academia as the "disinhibition effect" (Nixon, 2014).

It is accurate to refer to the 21st century as the technological age. Since the invention of the internet, a significant portion of social media interaction, particularly among teenagers, has taken place on social networking sites via electronic devices such as computers, smartphones, and tablets, exposing them to the effects of instant communication and its consequences, which are often detrimental. Parents, educators, and academics are becoming more concerned about cyberbullying, a new kind of violence that occurs online. Cyberbullying was once thought to be a continuation of conventional bullying, but a growing body of data indicates that it is a much more complex problem. The goal of the study was to explore how teenagers between the ages of 16 and 18 viewed impact of cyberbullying on their mental health.

1.1 Concept of Cyberbullying

Cyberbullying is defined as "the use of electronic communication to bully a person, typically by sending messages of an intimidating or threatening nature" by the Oxford English Dictionary. It is "the process of using the Internet, cell phones, or other devices to send or post text or images intended to hurt or embarrass another person," according to the American National Crime Prevention Council.

A regrettable by-product of modern communication technology is cyberbullying, especially on social media platforms like Facebook, Instagram, Snapchat, Twitter, and others. Posting rumours, threats, sexual comments, private or sensitive material, or derogatory labels are all examples of cyberbullying. Since social media has grown in popularity, both strangers and acquaintances may often access the comments, posts, images, and other information that people publish (Mahanta & Khatoniyar, 2019). An individual's internet information establishes a kind of permanent public record of their opinions, actions, and conduct. An individual's public record might be compared to their internet reputation. Cyberbullying may damage the victim's or bullied person's online reputation as well as that of the offender or others who engage in or encourage bullying activity. Several noteworthy issues with cyberbullying include

- **It is Relentless:** Cyberbullying is relentless in its reminder of its existence. Victims are constantly attached to their digital devices and may have no way to turn their devices off. The internet allows communication 24/7, which means the bullying can happen anytime and anywhere, leaving the victim with no way to escape.
- **It is Permanent:** Once information is shared or posted on the internet, it becomes permanent and public unless specifically deleted or restricted by the individual. Information shared or posted regarding victims of cyberbullying can have consequences related to a person's digital footprint, or digital shadow, which means a data collection of the unique record of all of a person's online activity, contributions, and communications that can be traced, and that is accessible on the internet or use of digital devices.
- **It is Unseen:** Cyberbullying cannot be visually checked or tabulated like a calendar. Traditional bullying can be observed by parents, teachers, or guardians, but cyberbullying mainly happens within beautifully colourful private digital spaces that other adults can't observe. Herein lies another conundrum with the adolescents. Adolescents are not likely to tell their parents or guardians when they are being bullied online. Consequently, it is hard to detect.

Research on cyberbullying has expanded in recent years, establishing it as a significant, pervasive, and expanding issue. The population under study, the time periods and methodology used, and definitional errors all affect the prevalence rates of cyberbullying (DePaolis & Williford, 2015). However, it has been shown that 10% to 40% of young people report having been the victim of cyberbullying, and 50% of them know someone who has. Bullying is often described as an aggressive behaviour that may be straightforward and involve hostile verbal, physical, psychological, or interpersonal actions (Kowalski et al., 2014). Bullying is characterised by intentionality, often takes place inside a relationship, and involves a power gap between the parties. A victimised kid or youngster usually suffers injury or unfavourable outcomes as a result of the violent behaviour, which is usually repeated over time (Mishna et al., 2010). Cyberbullying may be broadly characterised as the use of ICTs to harass another individual, even though there hasn't been much agreement on what exactly constitutes cyberbullying. Cyberbullying may include young people as witnesses, perpetrators, or victims. Compared to conventional offline bullying, these positions seem to be more ambiguous and difficult to discern in the context of cyberbullying (Barlińska et al., 2013). Additionally, a strong correlation between the incidence of bullying and cyberbullying. According to research, due to the part that cyberbullying plays, all kids and young people may suffer from severe social, mental health issues, and the effects of engagement on health (Mishna et al., 2016).

2. Literature Review

Babu et al. (2025) conducted a bibliometric analysis of research trends on social media, mental health, and cyberbullying from 2014 to 2024 in order to identify important topics, prominent authors, top journals, and new research trends. A collection of 203 papers was obtained from Scopus and examined using VOS viewer and Bibliophagy. Global cooperation networks, authorship trends, citation analysis, and keyword co-occurrence mapping were all included in the study. Results showed an annual increase rate of 36.22% in publications, indicating a rise in scholarly interest. Artificial intelligence (AI) and machine learning are developing as techniques for detecting and mitigating cyberbullying, and core study issues include depression, anxiety, and suicidal thoughts. Germany, the United Kingdom, and the United States are at the forefront of international cooperation. Research patterns were greatly impacted by the COVID-19 epidemic, which intensified conversations about the effects on mental health. Fahy et al. (2016) looked at the long-term relationships between teenage mental health and engagement in cyberbullying. 2,480 youths participated in the research on Olympic Regeneration in East London. The purpose of the study is to test the relationship between participation in cyberbullying with symptoms of depression, social anxiety, and mental health overall. Data was collected from subjects at age 12-13 and again at one year later. The study states that the incidence of cyberbullying and the risk of being a cybervictim each predict symptoms of social anxiety, depression, and below-average well-being in adolescents. To lessen teenage cyberbullying, future studies should pinpoint protective variables and potential remedies.

Kwan et al. (2020) examined the connection between cyberbullying and youth mental health outcomes, a strategic mapping analysis was carried out. Cyberbullying and outcomes related to mental health were shown to be strongly negatively correlated in 19 studies. However, since most research is cross-sectional, it has been impossible to demonstrate a definite causal

association. Because the main studies were not evaluated for quality, two-thirds of the reviews were categorised as poor or of ambiguous quality. This methodical map fills in the gaps in the synthesis of longitudinal and qualitative research and compiles the evidence that is currently accessible. can improve knowledge and guide the creation of specialised intervention programs to lessen the detrimental effects of this issue by doing further research on the moderating variables affecting cyberbullying behaviours.

Skilbred-Fjeld et al. (2020) found that cyberbullying was a serious public health issue that may lead to psychological discomfort in teenagers, including suicidal thoughts, self-harming behaviours, and depressed symptoms. 5% of 4531 participants in the survey (Norwegian high school graduates) reported being the target of cyberbullying. This outcome study examined three categories of cyberbullying: cybervictim, cyberbully, and cyberbully-victims. Those late adolescents who participated in cyberbullying were more likely to report distressed state, including: anxiety, sadness; self-harm, attempts to commit suicide and antisocial behavior to compare to those who did not. More awareness to the characteristics of cyberbullying may improve prevention and treatment efforts. Increased awareness may assist in potentially identifying and detecting those participating in cyberbullying behavior. This information will assist in understanding outcomes within cyberbullying and other psychological vulnerability factors.

2.1 Hypothesis Development

➤ **H1: Experiencing cyberbullying will have a significant effect on anxiety levels among adolescents.**

Amin et al. (2025) assessed the effects of cyberbullying on mental health problems experienced by adolescents. The study was conducted in five public secondary schools in the El-Beheira governorate of Egypt, using a cross-sectional descriptive research design. The sample was drawn using a multistage participant process to receive a random sample of 500 students, which provided a 96% response rate. The data were gathered using the Depression Anxiety Stress Scale-21 and the European Cyberbullying Intervention Project Questionnaire. The findings revealed high levels of victimisation had been experienced by 27.4% of respondents, while 32.0% of respondents experienced high levels of cyberaggression. Furthermore, 72.2% of students experience levels of anxiety classified as severe and above, 44% of students experience stress indicating moderate to severe levels, and 52.6% of respondents experience depression at severe levels or worse. The research also found that family monthly income levels and cyberbullying explained 61.6% of the variance of stress, anxiety, and depressive symptoms (adjusted $R^2 = .614$).

Romualdo et al. (2025) studied the effects of cyberbullying victimisation (CyVic), drug use and mental health behaviours of Brazilian adolescents utilising the National Survey of School Health (PeNSE). The sample contained 146,536 teens, all under 17 years old, and were selected using representative, probabilistic sample selection (random sampling). Those that reported being threatened, offended or humiliated on a social media site or messaging app in the 30 days before the survey was placed in the cyber-victims (CYB) group and those that did not were placed in the non-cyber-victims (nCYB) group. The results of the study illustrated the negative effects of CyVic and emphasised the need for tangible responses to address the issue and improve the mental health of adolescents.

Yun et al. (2025) aimed to bridge the gaps by exploring the literature, possible relationships with gender and levels of cyberbullying in relation to anxiety and self-esteem in secondary school students from the perspectives of cyberbullies and cybervictims among 337 cyberbullies and 382 cybervictims in the samples. The results revealed no significant interaction effects between gender and levels of cyberbullying or cybervictimization on anxiety and self-esteem in either direction; however, the constructs had significant main effects. This paper considered the implications of the findings. The findings of the study may also assist in understanding the implications of cyberbullying and its expected implications for psychological vulnerability characteristics that may be used to enhance treatment and prevention approaches.

Wang & Jiang (2023) performed a study based on General Strain Theory (GST) in which sadness and anger serve as mediators between sources of stress and cyberbullying. 1103 Chinese teenagers (52.5% of the sample were female) were asked to fill out questionnaires on financial hardship, anger, melancholy, parental strain, study strain, and cyberbullying. This research made use of structural equation modeling. In addition to being directly and favorably linked to cyberbullying, the results showed that financial stress also functioned via despair and anger to be linked to a greater likelihood of cyberbullying. Parental stress was positively associated with a higher likelihood of cyberbullying via anger and despair, but it had no direct influence on cyberbullying. It was surprising to find that study stress was inversely correlated with cyberbullying, and that in the Chinese setting, there was no substantial correlation between study stress and cyberbullying via despair or rage. There is discussion of how these discoveries may affect theory, practice, and further research.

➤ **H2: Witnessing cyberbullying will significantly increase depression levels in adolescents.**

Wu et al. (2024) investigated the role of anger and emotional dysregulation as a mediator and teacher support as a moderator of the relationship between exposure to family violence and cyberbullying offender behaviors within a sample of adolescent youth. The direct and indirect effects of exposure to family violence on adolescent cyberbullying through anger dysregulation as a mediator and teacher support as a moderator were examined through structural equation modelling. Main findings showed that there was a strong association between baseline exposure to family violence and adolescent cyberbullying at T3, and this association was slightly moderated by anger dysregulation at T2. The more positive perception of teacher support among adolescents rated relatively higher than others, the stronger the association between later anger dysregulation and seeing family violence.

Prince et al. (2025) explored the neurological mechanisms of body image-related cyberbullying (BRC) that focuses on a person's size, weight, and shape. They found that teenage girls who engage in cyber bystander behavior might also be more likely to display maladaptive eating behaviors and heightened body dissatisfaction. The study involved 413 girls who were between the ages of 14 and 19 and the authors developed 24 scenarios, 12 of which were BRC. They reported positive relationships between realism and severity with the adolescent sample perceiving the situations were more realistic. The study designed the Body Image-Related Cyberbullying Picture Series (BRC-PicS) to relate the influence of BRC on the psychological health of teenage girls with real situations.

As per Doumas & Midgett (2021) research to reduce the risks to a person's mental health associated with having a psychological bystander experience with the act of cyberbullying, it

was very important to offer programs that addressed assisting elementary school students who witness cyberbullying. Even after controlling for the rate of witnessing bullying in schools and being bullied, research conducted with 12 elementary school students showed significant relationships between witnessing cyberbullying and social anxiety and depression symptoms. Further, students who actually witnessed cyberbullying reported the most severe social anxiety and depression symptoms, suggesting that not only witnessing bullying while attending school has a serious moderating effect on these symptoms. These findings suggest a further need for thorough studies of the effects of the witnessing of cyberbullying and the impacts of mental health.

Research conducted by Dumas & Midgett (2023) on 130 middle school students indicated that internalising symptoms, which were correlated to higher levels of suicide ideation, were also positively correlated with witnessing cyberbullying. The findings revealed that the relationship between witnessing cyberbullying and suicidal ideation was mediated by internalising symptoms. Study results also showed that higher levels of internalising symptoms were positively correlated with frequency of witnessing cyberbullying and that the internalising symptoms were also correlated with higher levels of suicide ideation. The authors, in their study, identified the necessity of "intervention programs" to assist middle school students who were bystanders to cyberbullying to alleviate the negative impact on their mental health.

Harper (2022) found that cyberbullying is a serious problem that affects people of all ages and has detrimental effects including anxiety and sadness. However, the body of research on cyberbullying is constrained by a lack of knowledge about the digital environment and how young people see and assess cyberbullying. By offering a social-ecological model of cyberbullying that is based on Wearer and Espelage's bullying model and Bronfenbrenner's Ecological Systems Theory, this dissertation seeks to close these gaps. The research also identifies important criteria that young people use to categorize the intensity of cyberbullying activities. The dissertation also identifies obstacles that young adults believe are affecting the creation and execution of programs aimed at preventing and responding to cyberbullying, and it suggests remedies like greater awareness and education.

➤ **H3: Anxiety will mediate the relationship between experiencing cyberbullying and depression in adolescents.**

Liu et al. (2022) looked at the mediation role of mindfulness in the relationship between Chinese adolescent depression, anxiety and being a victim of cyberbullying using longitudinal data. At Time 1 (T1) and Time 2 (T2), 1274 Chinese high school students finished the tests. In the analyses, adolescents' self-reports of being victims of cyberbullying, mindfulness, anxiety, and depression were assessed. Findings demonstrated that mindfulness partly moderated the association between depression and anxiety and being a victim of cyberbullying, and our model suited the data well. This research demonstrated the possible significance of mindfulness in the connection between experiencing cyberbullying and feelings of anxiety and depression.

A study conducted by Yang et al. (2025) in Nantong City in Jiangsu Province found that cyberbullying, an issue commonly found on cell phones, significantly increased the odds of non-suicidal self-injury (NSSI). The study evaluated the relationship between cyberbullying and NSSI and examined whether, or to what extent, loneliness, stress, anxiety, and even depression act as mediators in that relationship. The study utilized causal mediation analysis, alongside Propensity Score Matching (PSM) to control for covariates that may be related and

drew upon a sample of 1,751 participants. Some of the key findings include a direct increase in the odds of NSSI due to cyberbullying, as well as an indirect increase through stressed, anxious, lonely, and depressed states. These findings highlight the need for further investigation of the relationship between non-suicidal self-injury, also known as self-harm, and cyberbullying.

Cao et al. (2023) studied the relationship between childhood trauma and adolescent cyberbullying, with emotional intelligence and online social anxiety as mediating variables. They used the Chinese Short Form of the Social Media User Social Anxiety Scale, the Childhood Trauma Scale, the Emotional Intelligence Scale, and the Cyber Bullying Scale and assessed 1,046 adolescents from a diverse sample of four schools in Shandong Province, China (average age = 15.79 years; 297 male and 749 female). SPSS Statistical analyses were conducted using AMOS 25.0. (1) Cyberbullying among adolescents was positively correlated with childhood trauma; (2) the relationship between cyberbullying and childhood trauma was partially mediated by emotional intelligence and online social anxiety; and (3) the association between cyberbullying and childhood trauma was mediated by emotional intelligence and online social anxiety.

Bitar et al. (2023) evaluated the relationship between Lebanese teenage suicide thoughts, anxiety, depression, and cyberbullying behaviour. This cross-sectional survey, which took place in May and June 2021, included the participants of teenagers between the ages of 13 and 16 who were selected conveniently from all private school districts in Lebanon. 520 pupils in all agreed to take part in our research. The study's findings on cyberbullying perpetration and related variables are important enough to warrant early identification and preventative measures for teenagers in Lebanon. At the educational level, successful programs that focus on social and emotional regulation and conflict resolution are required. These programs may reduce the number of teenagers who participate in cyberbullying. To lessen the involvement of Lebanese teenagers in cyberbullying, preventive measures are required.

Siah et al. (2022) found that cybervictimization, coping mechanisms, and depression have all been linked in studies; however, the mechanism behind these correlations has not been investigated. As a result, this research suggested that coping mechanisms operate as mediators between the effects of cybervictimization on depression and the transactional model of stress and coping theory. Through the use of purposive sampling, 387 teenagers in all were enlisted. The findings demonstrated that depression and cybervictimization are not closely related. The effects of cybervictimization on depression are statistically mediated by the avoidant coping strategy, however all coping methods are shown to be linked to cybervictimization. the transactional model of stress and coping theory may provide a framework for understanding cyberbullying and propose further measures to be taken to lessen the usage of avoidance coping mechanisms by cyberbullying victims.

➤ **H4: Self-esteem will moderate the effect of experiencing cyberbullying and anxiety.**

Albikawi (2023) evaluated the frequency of depression, poor self-esteem, cybervictimization, anxiety, cyberbullying, and Internet addiction among Saudi female nursing university students and determined the characteristics that predict cybervictimization and cyberbullying. For a descriptive cross-sectional research, 179 female nursing university students with an average age of 20.80 ± 1.62 years were chosen using convenience sampling. Among students, 19.55% expressed poor self-esteem, 30.17% reported depression, 49.16 percent reported Internet

addiction, 34.64% reported anxiety, 20.67 percent reported cyberbullying, and 17.32 percent reported cybervictimization. Students' self-esteem and their likelihood of participating in cyberbullying or being victims of cyberattacks were inversely correlated. Additionally, cyberbullying and cybervictimization were predicted by Internet addiction. Cyberbullying and cybervictimization were associated with a higher chance of feeling anxiety.

Quynh Ho et al. (2022) aimed to ascertain if the relationship between coping mechanisms and depressive symptoms of victims of cyberbullying among Vietnamese undergraduate students was mediated by self-esteem. Coping mechanisms were linked to symptoms of depression in victims of cyberbullying. The moderating function of self-esteem in the relationship between coping mechanisms and depressive symptoms in victims of cyberbullying, however, has not been well understood. A survey about coping mechanisms for depression, self-esteem, and cyberbullying was filled out by 606 Vietnamese undergraduate students. The results showed that self-esteem was a moderator in the relationship between coping strategies and depression symptoms among Vietnamese undergraduate students who had experienced cyberbullying. It moderated the relationship between the internalisation strategy and depression symptoms ($B = -0.176$, $se = 0.066$, $CI = [-0.305, -0.047]$) and between the problem-solving strategy and depression symptoms ($B = -0.237$, $se = 0.067$, $CI = [-0.369, -0.105]$). This emphasises the significant role of self-esteem on the capacity of victims of cyberbullying to cope with sadness and mental health outcomes.

Agustiniingsih et al. (2024) examined teenage self-esteem, bullying, and cyberbullying. Three databases were searched for mental health, health care, and social science literature. The terms “bully,” “victim,” “victimization,” “harassment,” “aggression,” and “abuse” were used to characterize cyberbullying victims and find related publications. From 861 papers discovered during the first search, 110 were evaluated for eligibility, and 10 were accepted. Most research linked self-esteem, bullying, and cyberbullying. Self-esteem was associated to cyberbullying victimhood but not perpetration or even bullying. High-self-esteem students at the start of the school year were more likely to become bullies as they became older. victimization and cybervictimization directly negatively affected self-esteem and peer issues. Self-esteem seems to reduce teenage bullying and cyberbullying. Parents should monitor and restrict teenage exposure to bullying, cyberbullying, and stress. Psychiatric nurses should examine teenagers and devise measures to boost self-esteem and minimize bullying and cyberbullying.

2.2 Research gap

The connection between cyberbullying and teenage mental health has been the subject of much study, but there are still several important unanswered questions. With a strong dependence on cross-sectional designs that restrict the capacity to infer long-term impacts, a large portion of the research currently in publication concentrates on demonstrating correlations rather than causal linkages. There is still a need for further research on the long-term effects of cyberbullying on mental health outcomes, even if some studies use longitudinal methodologies. Furthermore, despite the extensive research on depression, anxiety, and self-esteem, integrative models that consider the interaction of several psychological elements, such as the mediating and moderating effects of emotional intelligence, anger dysregulation, and social support networks, are scarce. Additionally, less is known about the impact of contextual elements such as family dynamics, cultural variations, and socioeconomic position. Furthermore, many studies tend to focus only on the experience of victims or offenders, ignoring the complex

experiences of bystanders and cyberbully-victims, whose mental health consequences may range greatly. Additionally, not enough studies have been done on how to incorporate new technologies, such as AI-based detection techniques, into preventative and intervention plans. Overall, even though the existing literature emphasizes the detrimental psychological impacts of cyberbullying, more thorough, multifaceted research that looks at protective mechanisms, causal pathways, and culturally sensitive interventions is needed to adequately address the growing problem of cyberbullying among teenagers.

3. Methodology

3.1 Research design

The research methodology included a quantitative analysis to examine the psychological effects of cyberbullying on the psychological distress of adolescents. Data from a sample of 384 respondents was selected using stratified random sampling to ensure representativeness. Data was gathered using a validated questionnaire that included Likert-scale questions to assess respondents' levels of sadness, anxiety, and self-esteem, as well as their experiences with cyberbullying and witnessing it. The research used SPSS, or statistical software for the social sciences, to explore the data. Suggested hypotheses were evaluated using AMOS (Analysis of Moment Structures) for structural equation modelling (SEM), which also looked at the relationships between the main variables.

3.2 Conceptual framework

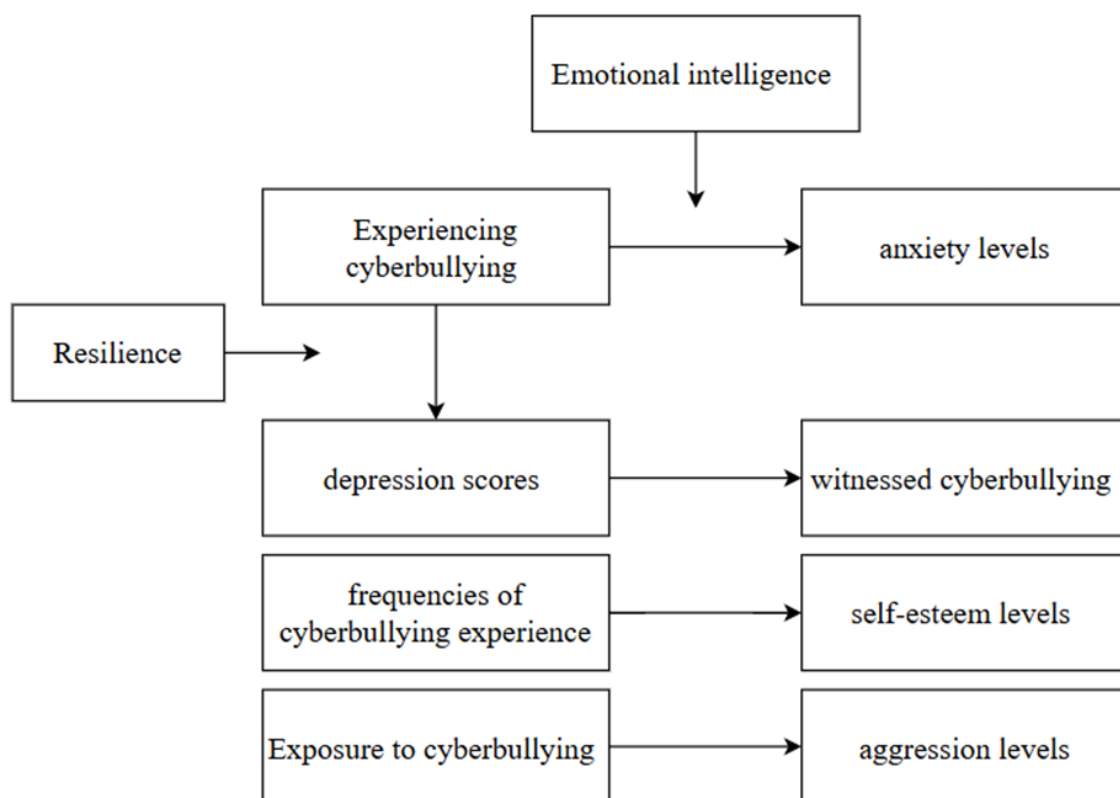


Figure 1: Conceptual framework

Thus, the conceptual framework demonstrates that cyberbullying can have psychological consequences, focusing on the emotional consequences of experiencing and observing cyberbullying, relating to mental health outcomes of anxiety and sadness. The study has hypothesised four significant interactions. First, the underlying principle of the study, is that

individuals (or targets) that are being exposed to the cyberbullying will likely experience greater levels of anxiety (H1). This would likely reflect the emotional burden that the experience of being a target of cyberbullying could have on someone. Second, the research shows that the act of simply observing someone being cyberbullied, without any involvement in the cyberbullying, in itself, could lead to increased levels of sadness (H2). Therefore, this signifies that there can be other psychological implications in simply being an exposed party to such harmful behaviours online. Third, the study defined a transition from anxiety to more serious mental health disorders as indicated by its third hypothesis stating there is an increase in levels of depression alongside increases in anxiety (H3). Finally, the framework has self-esteem included as a moderating effect on the model (H4). This indicates that people with higher self-esteem may more effectively resist the anxiety-producing effects of cyberbullying than people with lower self-esteem may be more vulnerable to the effects of cyberbullying. The framework illustrates the complex, multi-layered effects of cyberbullying, and how these effects can affect mental health. The effects are moderated by both direct and indirect exposure to the Child Online Protection Environment (COPE), and available psychological resources, such as the self-esteem of the individual being bullied.

3.3 Objectives

- i. To explore the impact of encountering cyberbullying on anxiety levels.
- ii. To compare depression scores between adolescents who have witnessed cyberbullying and those who have not
- iii. To examine whether self-esteem significantly differs among groups based on frequency of cyberbullying experience.

3.4 Sample selection

A stratified random sample method was used to pick adolescents from various regions (rural, semi-urban, and urban) and educational levels (9th–12th) to guarantee equitable representation. Recruitment was executed online using Google Forms, email, and fintech lending platforms, specifically targeting teenagers in semi-urban and rural regions where school-based surveys were impractical. Individuals with severe psychological illnesses were excluded, and eligibility required participation in secondary education and consistent internet access. In accordance with institutional ethical standards, participant assent and parental permission were secured.

3.5 Data collection

The quantitative methodology used in this study relied on methodical data collection techniques to guarantee correctness and dependability. To assess the psychological effects of cyberbullying on teenagers' mental health, a systematic questionnaire was used. The questionnaire included validated and standardized tools: the Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depression, the Beck Anxiety Inventory (BAI) was used to measure anxiety, and the Rosenberg Self-Esteem Scale (RSES) was used to measure self-esteem. Assessments of cyberbullying and cyberbullying witnessing were also conducted using modified questions from the European Cyberbullying Intervention Project Questionnaire (ECIPQ). Each question was scored using a 5-point Likert scale that went from "strongly disagree" to "strongly agree." The trustworthiness of the instruments was confirmed by their remarkable internal consistency. Teenagers in urban, semi-urban, and rural regions were able to participate in the survey since it was distributed online using email, Google Forms,

and fintech lending platforms. Secondary data from official publications, institutional records, and peer-reviewed studies were also examined to bolster the conclusions.

3.6 Measures

We collected data with the use of a structured questionnaire which utilizes a 5-point Likert scale (ranging from Strongly Disagree to Strongly Agree). Respondents were asked to express their views regarding multiple research questions addressed in the research. The questionnaire consisted of both open-end and closed-end questions, which were deliberately designed, to arrive at the information of value for the respective research variables. As it will be discussed later, the survey includes categories of respondents, and there was a specific questionnaire for each group of respondents. The table 1 outlines the corresponding variables and the respective number of items which were examined in the study.

Table 1: Corresponding variables and the respective number of items

S. No	Variable Name	No. Items
1	Self-esteem	5
2	Experiencing cyberbullying	5
3	anxiety levels	5
4	Witnessing cyberbullying	5
5	depression levels	5

Inclusion/exclusion criteria:

Inclusion criteria:

- Teenagers between the ages of 13 and 18.
- Enrolled in classes 9–12 in secondary school.
- Frequent use of the internet (via a computer, tablet, or smartphone) to guarantee familiarity with online interactions where cyberbullying takes place.
- Capacity to give informed consent, with guardian or parental approval as needed for minors.

Exclusion criteria:

- Adolescents who were under therapeutic treatment for serious mental illness at the time of the study or who had a documented psychiatric disease.
- The questionnaire that are inconsistent or lacking information.
- Participants who are not enrolled in school or who fall outside of the specified age range.

3.7 Ethical consideration

The ethical guidelines for research with minors were followed in this work. The Institutional Ethics Committee of Banasthali Vidyapith, Rajasthan, granted approval prior to data collection. Given that the participants were teenagers between the ages of 13 and 18, written informed consent was obtained from their parents or guardians, and prior to participation, the students' own assent was gathered. Participants were informed that their participation was entirely optional and that they could withdraw at any time without incurring any consequences. They were also assured of the confidentiality and anonymity of their responses. The data was securely stored and used solely for research and academic purposes.

4. Results

4.1 Demographic variables

Table 2: Demographic variables

Demographic variable	Frequency	Percentage
Gender	Male	178
	Female	206
	Total	384
Age	13-15 Years	199
	16-18 Years	185
	Total	384
School level	9th Class	91
	10th Class	96
	11th Class	100
	12th Class	97
	Total	384
Location	Urban	134
	Semi urban	130
	Rural	120
	Total	384

The demographic profile of the respondents in this study on the psychological impact of cyberbullying among adolescents consists of a balanced and diverse sample (Table 2). Out of the total 384 participants, 46.4% were male ($n = 178$) and 53.6% were female ($n = 206$), indicating a slightly higher representation of female adolescents. In terms of age distribution, a majority (51.8%, $n = 199$) belonged to the 13–15 years' age group, while 48.2% ($n = 185$) were between 16–18 years, ensuring good representation of both early and late adolescence. The sample also reflected a fairly even distribution across academic levels, with students from 9th class (23.7%), 10th class (25.0%), 11th class (26.0%), and 12th class (25.3%) participating, suggesting a well-rounded academic cross-section. Additionally, the geographic spread showed that 34.9% of respondents were from urban areas, 33.9% from semi-urban regions, and 31.3% from rural settings, providing a comprehensive understanding of cyberbullying experiences across different residential backgrounds. This diverse demographic composition strengthens the generalizability and relevance of the study findings.

Table 3: Internal Consistency and Convergent Validity

Constructs	Cronbach's Alpha	Composite Reliability	AVE
Experiencing cyberbullying	0.879	0.83665569	0.6996839
Anxiety levels	0.864	0.84321894	0.8188564
Witnessing cyberbullying	0.897	0.86888127	0.7958448
Depression Scores	0.859	0.8177529	0.6548793
Self esteem	0.848	0.8051014	0.6283498

The reliability and validity measures for the study's constructs demonstrate strong internal consistency and satisfactory levels of convergent validity (Table 3). Cronbach's Alpha ratings

for all constructs, ranging from 0.848 (Self-esteem) to 0.897 (Witnessing cyberbullying), beyond the widely accepted threshold of 0.70, indicating substantial internal reliability. The Composite Reliability (CR) ratings for each construct vary from 0.8051 to 0.8688, therefore affirming the reliability of the measuring items. The Average Variation Extracted (AVE) values, which evaluate the variation captured by the concept in relation to measurement error variance, also satisfy the suggested minimum of 0.50 for convergent validity. The AVE values vary from 0.6283 to 0.8188, indicating that a significant fraction of variation is explained by the latent components. These findings indicate that the measuring approach is accurate and valid for evaluating dimensions such as experiencing and witnessing cyberbullying, anxiety, depression, and self-esteem.

4.2 Hypothesis development

Table 4 presents the results of hypothesis testing through path analysis, showing the relationships between cyberbullying experiences, anxiety, depression, and self-esteem, with all hypotheses related to these variables being supported, except for the direct relationship between experiencing cyberbullying and depression scores.

Table 4: Hypothesis Development and Results of Path Analysis

Hypothesis	Relationship			Estimate	C.R.	Sig. P-Value	Results
H1	Experiencing cyberbullying	---->	Anxiety levels	0.708	11.529	***	Accepted
H2	Witnessing cyberbullying	---->	Depression Scores	0.769	12.174	***	Accepted
Mediating							
H3	Experiencing cyberbullying	---->	Anxiety levels	0.631	15.897		
	Experiencing cyberbullying	---->	Depression Scores	0.445	10.149	***	Accepted
	Anxiety levels	---->	Depression Scores	0.382	8.71		
Moderating							
H4	ZSelf esteem	---->	ZAnxiety levels	0.284	0.696	***	
	ZExperiencing cyberbullying Interaction	---->	ZAnxiety levels	0.522	12.8	***	Accepted
	(ZExperiencing cyberbullying*Z Self esteem)	---->	ZAnxiety levels	0.108	2.652	0.008	

- **H1: Experiencing cyberbullying will have a significant effect on anxiety levels among adolescents.**

The results support Hypothesis 1, which states a positive relationship between the experience of cyberbullying and anxiety levels. The path estimates of 0.708, accompanied by a critical ratio (C.R.) of 11.529 and a significance value denoted as ($p < 0.001$), indicates an effective and statistically significant impact. This indicates that persons subjected to cyberbullying are much more likely to report heightened levels of anxiety. The strong nature of this correlation emphasises the emotional burden that cyberbullying imposes on victims and stresses the need to address these experiences in mental health treatments.

➤ **H2: Witnessing cyberbullying will significantly increase depression levels in adolescents.**

The results demonstrated that Hypothesis 2 is accepted, while the data indicate a strong positive association between exposure to cyberbullying and depression ratings. The estimate of 0.769 and a C.R. of 12.174, along with a very significant p-value, indicate that even bystanders to cyberbullying, those who see it rather than personally endure it, are susceptible to increased depressed symptoms. This discovery expands the understanding of cyberbullying's psychological effects, suggesting that indirect exposure may potentially adversely affect mental health.

➤ **H3: Anxiety will mediate the relationship between experiencing cyberbullying and depression in adolescents.**

The mediation model confirms the strong connection between cyberbullying experiences and anxiety levels, shown by an estimate of 0.631 and a significant critical ratio (C.R.) of 15.897, therefore substantiating the mediation route. Furthermore, the occurrence of cyberbullying has a direct impact on depression scores (estimate = 0.445, C.R. = 10.149), whereas anxiety levels substantially forecast depression ratings (estimate = 0.382, C.R. = 8.71). Collectively, these data indicate a partial mediation, with anxiety levels serving as a mediator between the experience of cyberbullying and depression. This indicates that cyberbullying directly contributes to depression and indirectly contributes to it by heightening anxiety.

➤ **H4: Self-esteem will moderate the effect of experiencing cyberbullying on anxiety in adolescents.**

Hypothesis 4 examines the moderating influence of self-esteem on the relationship between cyberbullying experiences and anxiety levels. The impact of self-esteem on anxiety levels is statistically significant (estimate = 0.284, C.R. = 0.696), while the C.R. is comparatively low, indicating that the effect size may be moderate. The direct effect of cyberbullying on anxiety is substantial (estimate = 0.522, C.R. = 12.8). The interaction term between cyberbullying experiences and self-esteem is significant (estimate = 0.108, C.R. = 2.652, $p = 0.008$), suggesting a moderating influence. This indicates that self-esteem moderates or modifies the intensity of the association between cyberbullying and anxiety. Individuals with elevated self-esteem may be less susceptible to the anxiety-provoking consequences of cyberbullying, hence serving as a psychological protective factor.

5. Discussion

This research shows that cyberbullying has serious psychological repercussions on teenagers. Cyberbullying increases adolescent anxiety, according to the first hypothesis. Previous psychological research has shown that cyberbullying is a major stressor that impairs emotional stability. Cyberbullying's relentlessness and lack of limits or escape routes may enhance

anxiety in victims, according to path estimations and critical ratios. Hypothesis 2 showed that watching cyberbullying without being targeted also raises depression. Teens are emotionally impacted by angry online conversations, highlighting the larger emotional effects of peer group cyberbullying. Bystanders may internalize these experiences owing to their emotional sensitivity and peer relationships, causing psychological suffering. Hypothesis 3's mediation analysis illuminated this psychosocial effect's mechanism. Both a direct and an anxiety-mediated mechanism linked cyberbullying to depression. This shows that cyberbullying causes anxiety and depression symptoms. High anxiety may exacerbate online harassment. Finally, Hypothesis 4 analyzed self-esteem as a moderator. Adolescents with strong self-esteem had lesser anxiety when exposed to cyberbullying. Self-esteem protects against the emotional effects of unpleasant internet encounters. High-self-esteem adolescents may digest or ignore bad content without internalizing or letting it define them. These results show that cyberbullying, whether experienced or witnessed, affects teenage anxiety and sadness. Self-esteem may protect against the psychological repercussions of online abuse.

6. Limitations

There are several limitations to this research. To begin, its cross-sectional design precludes drawing conclusions about the causal relationship between depression, anxiety, and cyberbullying. The accuracy of replies may be impacted by social desirability bias, which may be introduced by depending only on self-reported data. Third, the sample may be biased toward teens who are more tech-savvy since it was mostly gathered online. These elements could make it more difficult to extrapolate the results to all teenagers, especially those from diverse cultural backgrounds or those with less access to the internet.

7. Conclusion

The research suggests cyberbullying has substantial effects on teenage mental health in a variety of domains. Cyberbullied youth show a higher level of anxiety, which can lead to depression, indicating a mediated relationship. Bystanders to cyberbullying are also vulnerable and have an increased risk of depressive symptoms. Self-esteem could play an important psychological variable that might buffer the effects of cyberbullying on anxiety. These results have clear implications for educators, parents, mental health professionals, and policy makers. Anti-cyberbullying initiatives must include not just direct offenders and victims but also help bystanders of such conduct. Furthermore, mental health programs must prioritise the enhancement of adolescents' self-esteem and emotional resilience as a preventative strategy. Educational institutions and online platforms must provide secure digital environments and promote peer support mechanisms. The research concludes that experiencing or witnessing cyberbullying substantially exacerbates mental health difficulties, including anxiety and depression, in teenagers, with anxiety serving as a mediator and self-esteem as a moderator in these connections. Empowering teenagers with psychological support and resilience-building programs is essential for alleviating these impacts.

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