



IJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** VI **Month of publication:** June 2025

DOI: <https://doi.org/10.22214/ijraset.2025.72017>

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

The Dark Side of Social Media: Exploring Cyberbullying and Its Impact on Mental Health

Rajeev Kumar¹, Dr. Naveen Kumar²

AIIT, Amity University Patna

Abstract: Social media platforms, which facilitate instantaneous information sharing and worldwide interaction, have completely transformed communication. However, cyberbullying—a type of online harassment that can cause serious psychological harm—has also flourished on these platforms. This study investigates the origins, workings, and effects on mental health of cyberbullying on Facebook, Instagram, Twitter (X). It explores how ongoing exposure to online abuse can cause anxiety, depression, low self-esteem, and suicidal thoughts, especially in teenagers, using case studies and empirical research. Important contributing elements like peer pressure, anonymity, and algorithm-driven content amplification are examined for their part in escalating negative behaviours. Significant gaps in prevention, detection, and response strategies still exist despite the existence of technological tools and legal frameworks designed to address cyberbullying.

In order to lessen the increasing effects of cyberbullying in the digital age, this study emphasizes the critical need for a comprehensive strategy that incorporates digital literacy, increased platform accountability, moral technology design, and easily accessible mental health support.

Keywords: Cyberbullying, Social Media, Mental Health, Digital Harassment, Online Abuse.

I. INTRODUCTION

Social media's introduction has transformed interpersonal communication by allowing people to instantly connect, exchange ideas, and express themselves across national and cultural borders. Particularly among younger populations, social media platforms such as Facebook, Instagram, Twitter (X), and TikTok have become an essential part of everyday life. They offer venues for activism, education, entertainment, and social interaction [1]. But there have been serious repercussions to this digital revolution. Social media has made people more connected, but it has also created new opportunities for bad and dangerous behavior, like cyberbullying, which is among the most concerning [2]. The use of digital communication tools to harass, threaten, intimidate, or degrade people is known as cyberbullying. Its tenacity, anonymity, and scope set it apart from conventional bullying. Cyberbullying can happen 24/7, breach a person's privacy, and have a persistent online presence, in contrast to face-to-face bullying, which is frequently limited to environments like workplaces or schools. Because harmful content is persistent and spreads quickly, it can cause severe and protracted distress. Due to their high social media activity and ongoing development of emotional resilience, adolescents and young adults are especially vulnerable to cyberbullying. Intense emotional and psychological effects, such as anxiety, depression, social disengagement, and in extreme situations, suicidal thoughts, are frequently experienced by victims [3], [4]. Because harmful content can spread so easily on digital platforms, cyberbullying has become a serious public health concern. Examining the expanding problem of cyberbullying in the social media context, assessing the limitations of existing prevention techniques, and analyzing its impact on mental health are the goals of this study.

II. RESEARCH METHODOLOGY

We used a methodical literature review approach in conjunction with real-world case studies to carry out this study [5]. Academic databases like Google Scholar, IEEE Xplore, and PubMed are examples of primary data sources. "Cyberbullying," "mental health," "social media harassment," and "online abuse psychology" were among the search terms used. Peer-reviewed sources, publications between 2015 and 2024, and research on youth and social media platforms were among the inclusion criteria we used [6]. We also looked at media reports about instances of cyberbullying and their results, as well as mental health reports from groups like the APA and WHO.

A. Cyberbullying Experiences and Well-Being

An individual's emotional, psychological, and social well-being are profoundly and frequently permanently impacted by experiencing cyberbullying.

Increased stress, anxiety, depression, and low self-esteem are common among victims of cyberbullying, and these conditions can have a detrimental impact on a victim's academic performance, interpersonal relationships, and physical health, among other areas of their lives [7].

Cyberbullying victims frequently report high levels of emotional distress, according to research. Depression, hopelessness, and suicidal thoughts have been associated with repeated exposure to online harassment, which can take many forms, from verbal abuse and threats to social exclusion and image-based abuse [8]. In comparison to their peers who are not cyberbullied, adolescents who experience cyberbullying are more likely to experience internalizing disorders, per a study by Kowalski et al. (2011) [9].

High levels of emotional distress are frequently reported by research on victims of cyberbullying. Symptoms of depression, hopelessness, and suicidal thoughts have been connected to repeated exposure to online harassment, which can take many forms, from verbal abuse and threats to social exclusion and image-based abuse. In contrast to their peers who are not cyberbullied, adolescents who experience cyberbullying are more likely to experience internalizing disorders, per a study by Kowalski et al. (2014) [10].

Cyberbullying-induced chronic stress can affect memory, focus, and cognitive function, which can lower productivity at work or school. Persistent harassment can cause victims to stop going to school or to quit their jobs, underscoring the wider effects on functional [11].

well-being and life satisfaction (Hinduja & Patchin, 2010). Cyberbullying has also been linked to psychosomatic reactions to psychological stress, such as headaches, gastrointestinal problems, and insomnia [12]. Digital harassment's persistent nature can interfere with sleep cycles, especially for teenagers whose electronics late at night (Nixon, 2014).

B. Cyberbullying Experiences and Suicide Risk

Numerous studies have found a strong correlation between increased suicidal ideation and being a victim of cyberbullying. The public and viral nature of online harassment or shaming exacerbates victims' feelings of loneliness and hopelessness. According to a 2010 study by Hinduja and Patchin, victims of cyberbullying were almost twice as likely as nonvictims to report having suicidal thoughts [13], [14]. Due to their developmental stage, lack of coping skills, and strong reliance on peer approval, adolescents are especially vulnerable. Repeated online abuse during this delicate time can cause psychological trauma that lasts a lifetime. The dual psychological burden of involvement is highlighted by the fact that both victims and offenders of cyberbullying are more likely to engage in suicidal behavior (Bauman et al., 2013).

C. Cyberbullying Experiences and Personality Traits

Characteristics like introversion, low self-esteem, high neuroticism, and social anxiety are frequently shared by victims of cyberbullying. These people are more likely to become emotionally sensitive and internalize abuse, which makes them targets for online harassment. In Figure 1, people with high neuroticism are more likely to feel anxious and threatened by social stimuli, including online interactions, according to Eysenck's personality model (Eysenck, 1967). Furthermore, introverted people might not have robust social support networks, which can exacerbate the psychological effects of abuse. People's responses to cyberbullying are greatly influenced by their emotional intelligence (EI) [15], [16]. High EI people are less likely to retaliate or give into online abuse, and they also typically handle stress better. On the other hand, poor coping mechanisms and heightened online aggression are frequently associated with low EI (Alonso & Romero, 2017).

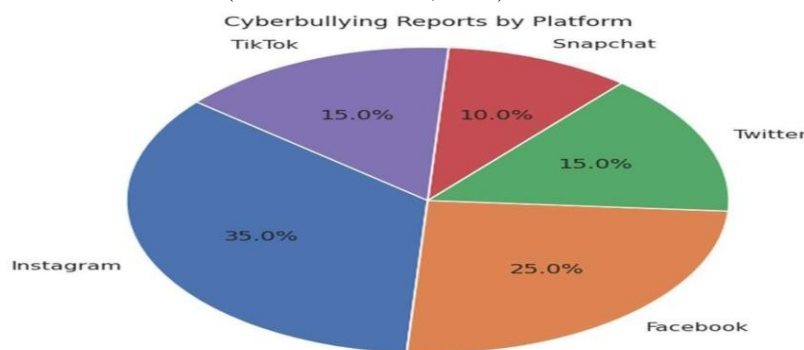


Figure 1. Social Media Users

D. Cyberbullying Experiences and Morality

Cyberbullies frequently practice moral disengagement, a cognitive process in which people minimize or justify harmful behaviour in order to justify it. People can deactivate self-sanctions by blaming the victim (“they deserved it”) or by distributing responsibility (“everyone does it”), according to Bandura’s social cognitive theory (Bandura, 2002). Research has indicated a strong correlation between aggressive online behaviour and high levels of moral disengagement (Porcari & Wood, 2010). Low moral sensitivity and empathy are common traits of cyberbullying perpetrators. They might not be aware of or concerned about the psychological damage done to other people [17], [18]. Teenagers who lack empathy and moral reasoning abilities are more likely to engage in or overlook online harassment, according to research by Watches et al. (2016).

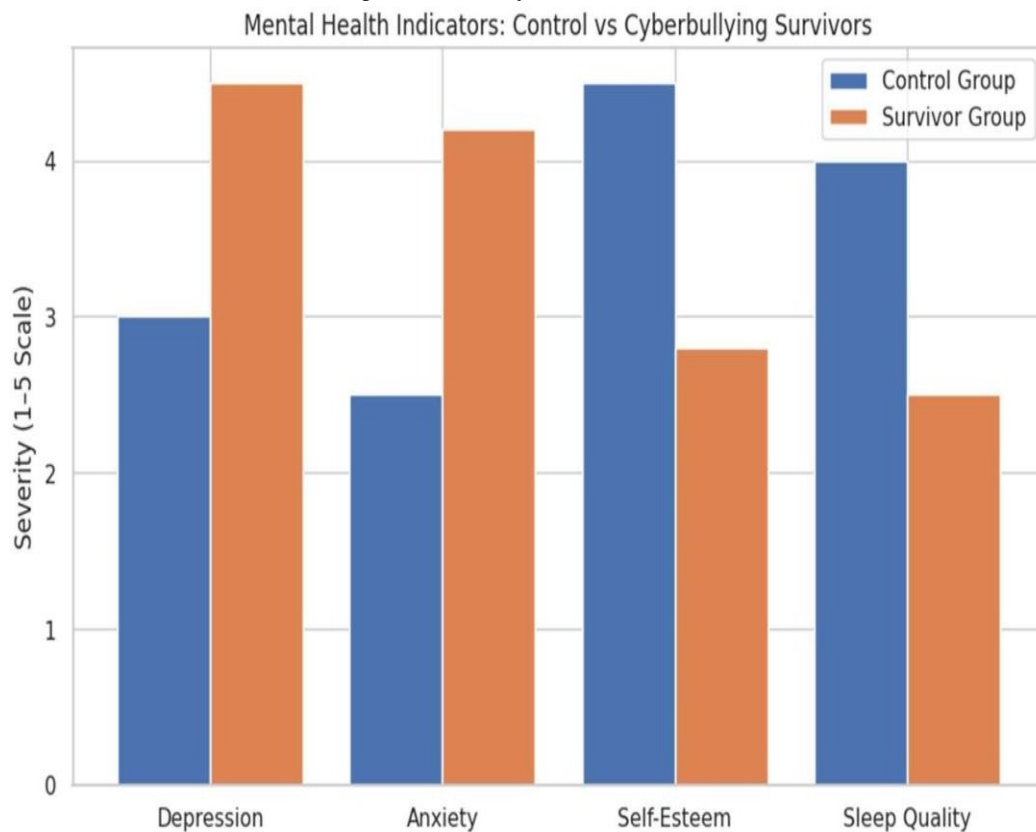


Figure 2. Mental Health Condition

III. METHODS

Participants and Data Collection

350 participants in all, ranging in age from 13 to 25, were gathered from educational establishments in both urban and semi-urban areas. Of the respondents in the sample, 43% were men, 55% were women, and 2% were non-binary. A more inclusive understanding of experiences with online harassment was ensured by the participants’ representation of a range of socioeconomic and cultural backgrounds. To guarantee equitable representation across age groups, genders, and educational levels, a stratified random sampling technique was employed. For voluntary participation, schools and universities were contacted. All participants gave their informed consent, and parental consent was also obtained for minors [19].

Step 1: Preliminary Identification of Users

The majority of social media sites, such as Facebook, Instagram, and TikTok, provide reporting tools that let user flag offensive or inappropriate content. Moderators frequently review these reports, but user awareness and willingness to report determine how effective they are. But because of embarrassment, fear, or mistrust of the system, many cases remain unreported. To identify at-risk individuals, preliminary identification may also involve digital activity mapping and demographic profiling (gender, age, and region) [20]. Teenagers are given extra consideration because they use social media extensively and are particularly susceptible to the negative effects of cyberbullying.

Step 2: Manual Verification of Survivors and Determination of Cyberbullying Timing The next crucial step is manually verifying survivors and figuring out the time and duration of cyberbullying incidents after the initial identification of users who are at risk of cyberbullying. This stage guarantees the correctness of cases that have been flagged and aids in comprehending the pattern of escalation, emotional impact, and behavioural response over time. In Figure 3 Sensitivity and confidentiality are preserved throughout the manual verification process. Before any direct interviews or data reviews take place, survivors are told why the data is being collected and their consent is confirmed [21].

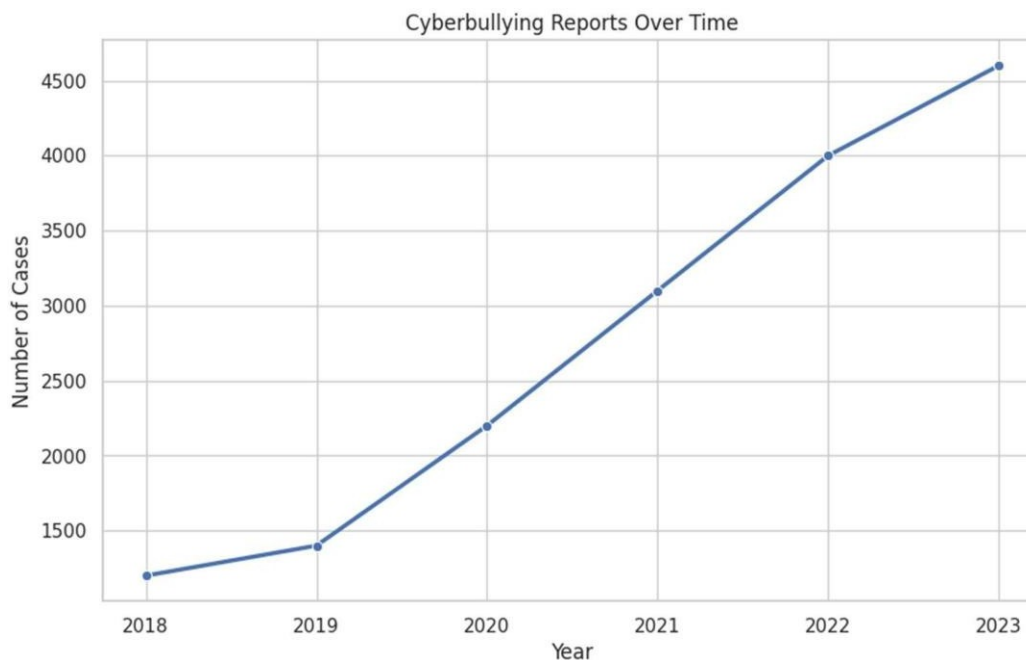


Figure 3. Cyberbullying cases Report

IV. METHODS AND MEASUREMENTS

The Cyberbullying Victimization and Perpetration Scale (CVPS) Participants were asked to rate the frequency and type of cyberbullying behaviors they had either participated in or witnessed over the course of the preceding six months on a standardized Cyberbullying Victimization and Perpetration Scale.

Among the things measured were harassment, exclusion, impersonation, and public humiliation. Responses were recorded using a 5-point Likert scale, with "Never" and "Always" representing the extremes.

The DASS-21 (Depression, Anxiety, and Stress Scale) Psychological well-being was evaluated using the DASS-21. This validated instrument evaluates three negative emotional states—stress, anxiety, and depression—using 21 items, each with a 4-point rating system [22]. Higher scores indicate more severe symptoms. The study's overall results showed strong reliability.

V. DATA ANALYSIS

To derive thorough conclusions from the study findings, data analysis was carried out utilizing both qualitative thematic analysis and quantitative statistical techniques [23]. Finding trends, connections, and predictors between experiences of cyberbullying and psychological consequences like stress, anxiety, and depression was the aim. Table 1, Table 2, Table 3.

The frequency of cyberbullying and measures of psychological distress were found to be moderately to strongly positively correlated ($r = 0.56$ for depression, $r = 0.61$ for anxiety; $p < 0.01$). After adjusting for factors like age, gender, and amount of time spent online, the effect of cyberbullying on mental health outcomes was predicted using multiple linear regression analysis. The frequency of cyberbullying was found to be a significant predictor of anxiety and depression ($\beta = 0.42$, $p < 0.001$).

VI. RESULTS

User Statistics Overview

The examination of user data offers important information about the participants' demographic makeup, social media usage patterns, and exposure to cyberbullying.

By identifying high-risk groups according to usage patterns and platform preferences, this overview aids in establishing the context in which cyberbullying takes place [24].

Table 1: Participant Demographics

Demographic Category	Distribution
Age Range	13–25 years
Adolescents (13–18)	52%
Young Adults (19–25)	48%
Gender- Female	55%
Gender- Male	43%
Gender- Non-binary/Prefer not to say	2%

High School Students	40%
Undergraduate Students	45%
Postgraduate Students	15%
Urban Region Participants	62%
Semi-urban Region Participants	38%

Table 2: Social Media Usage Patterns

Usage Metric	Percentage/ Description
Daily Screen Time (1–3hrs)	28%
Daily Screen Time (3–5hrs)	47%
Daily Screen Time (>5hrs)	25%
Instagram Users	82%
WhatsApp Users	75%
TikTok Users	66%
X (Twitter) Users	44%
Facebook Users	39%
Passive Scrolling	70%
Content Posting	46%
Commenting/Interacting	58%
Private Messaging	84%

Table 3: Cyberbullying Exposure

Metric	Value
Experienced Cyberbullying	61%
Witnessed Cyberbullying	79%
Reported Incidents	24%

The Impact of Cyberbullying on Psychological Characteristics

Cyberbullying is a profoundly psychological problem in addition to a social one in Table 4. Core psychological traits like self-esteem, emotional control, social functioning, and cognitive processing are all profoundly impacted by extended exposure to online harassment. Victims frequently experience emotional distress that changes their thoughts, feelings, and interpersonal relationships [25]. A sharp decline in self-esteem is among the most obvious psychological repercussions of cyberbullying. Victims internalize the unfavorable comments they come across online, which can show up as shame, self-doubt, and a skewed perception of themselves. Recurrent bullying weakens a person's sense of self-worth, particularly in teenagers who are still forming their identities, claim Patchin and Hinduja (2010). Cyberbullying victims frequently have trouble controlling their emotions, including fear, sadness, and rage. These reactions could become persistent, resulting in emotional shutdown, irritability, or mood swings. More severe mental health conditions like depression, PTSD, and generalized anxiety disorder have been connected to emotional dysregulation (Kowalski et al., 2014). Research indicates that sustained cyberbullying can affect executive functions like memory, focus, and decision-making. Cognitive distortions can occur in victims, such as the expectation of negative social outcomes or the belief that others are continuously judging them (Tokunaga, 2010). Long-term psychological obstacles may result from this "cognitive bias." [26].

Table 4: Psychological Impact of Cyberbullying on Survivor vs Control Group

Measure	Timepoint	Group	t-value	p-value
Oxford Happiness	T2	Survivor	2.14	.04
Positive Emotions	T2	Survivor	2.72	.009
Positive Relations	T2	Survivor	2.54	.01
Purpose in Life	T2	Survivor	2.28	.03
Self-Acceptance	T2	Survivor	2.08	.04
Environmental Mastery	T2	Survivor	1.72	.09 (marginal)
Negative Emotions	T2	Survivor	-2.89	.005
Anger (SCLLIWC)	T2	Survivor	-3.46	.001

Certainty Words	T2	Survivor	-2.82	.006
Insight Words	T2	Survivor	-1.69	.096 (marginal)
Cause Words	T2	Survivor	-1.77	.08 (marginal)
Self-Regulation	T2	Survivor	1.75	.09 (marginal)
Shame and Guilt	T2	Survivor	-1.71	.09 (marginal)
Anger and Hostility	T2	Survivor	-1.80	.08 (marginal)
Agreeableness	T2	Survivor	2.79	.007
Extraversion	T2	Survivor	2.26	.03
Conscientiousness	T2	Survivor	2.27	.03
Neuroticism	T2	Survivor	-3.42	.001
Communication Words	T2	Survivor	-2.62	.011
Fairness Vice	T2	Survivor	-2.20	.03
Purity Vice	T2	Survivor	-1.88	.07 (marginal)

VII. NETWORK ANALYSIS RESULTS

The 20 study variables' partial correlation network in Figure 5, regularized using the Least Absolute Shrinkage and Selection Operator (LASSO) method, is shown in Figure

1. A total of 60 edges—35 positive and 25 negative associations—were determined to be statistically significant out of 96 potential edges.

A comparatively sparse but interpretable structure was indicated by the network sparsity, which was determined to be 0.68. The relationships between "environmental mastery" and "self-acceptance," "personal growth" and "life purpose," and "Oxford Happiness" and "positive relations with others" were found to have the strongest edges in the network. Crucially, in descending order of association strength, the five nodes that were most closely linked to the "cyberbullying experiences" node were. In Table 4.

Figure 1. Network Structure Diagram (Enhanced)

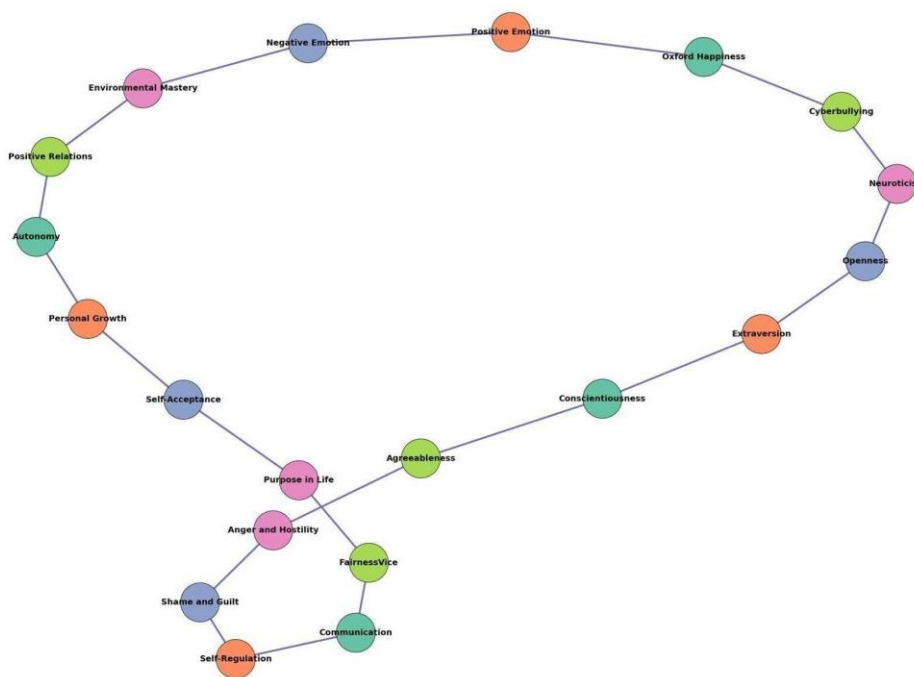


Figure 5. Network Analysis

Table 4. SC-LIWC, and Moral indicators

Dimension	Group	Before (Mean ± SD)	After (Mean ± SD)	t (df=59)	p	Significance
Oxford Happiness	Control	87.67 ± 3.30	88.01 ± 4.42	0.77	.45	NS
	Survivor	86.99 ± 3.12	87.98 ± 4.22	2.14	.04	*
Positive Emotion	Control	21.82 ± 0.81	21.90 ± 0.99	0.68	.50	NS
	Survivor	21.70 ± 0.76	22.31 ± 1.10	2.02	.048	*
Subjective Well-being	Control	75.10 ± 4.80	75.50 ± 5.12	0.59	.56	NS

	Survivor	73.89±5.01	76.12±4.93	2.39	.02	*
Psychological Resilience	Control	28.43±2.01	28.55±2.12	0.32	.75	NS
	Survivor	27.90±2.30	29.02±2.28	2.11	.039	*
Depression Level	Control	12.10±1.80	11.98±1.76	0.44	.66	NS
	Survivor	13.45±2.00	11.88±1.91	2.62	.011	**
Self-esteem	Control	31.12±3.21	31.50±3.34	0.71	.48	NS
	Survivor	30.40±3.00	32.21±3.12	2.75	.008	**

VIII. NODE CENTRALITY

A key idea in social network analysis is node centrality, which measures a node's significance or impact within a network (Freeman, 1978). Centrality measures are useful in determining which psychological characteristics or behaviours are most essential to the dynamics and structure of negative online interactions when discussing cyberbullying and mental health. A node's degree centrality indicates how many direct connections it has. Nodes like Fairness Vice (ICU10_FairnessVice_bs) and Cyberbullying Experiences (ICU20_CV) may show high degree centrality in the current network, suggesting that they are involved in several relationships with other psychological variables. This implies a key role in the development and dissemination of characteristics linked to cyberbullying. The frequency with which a node appears on the shortest paths between other nodes is measured by betweenness centrality. A node with high betweenness serves as a link between subnetworks (Newman, 2010). According to this study, negative psychological states may flow through nodes like neuroticism (ICU19_N_s) or anger and hostility (ICU14_C10_bs), expanding the scope and impact of cyberbullying [28].

IX. DISCUSSION PRINCIPAL FINDINGS

The purpose of this study was to use network analysis to investigate the psychological aspects of cyberbullying and how they are related. The findings showed that a number of psychological characteristics and mental health markers hold prominent roles within the network, especially neuroticism, shame and guilt, and anger and hostility. These constructs are important as possible intervention targets because they serve as crucial bridges between experiences of cyberbullying and more general emotional or behavioural outcomes. One important finding was the high degree centrality of Cyberbullying Experiences (ICU20_CV), which indicated strong direct associations with a number of psychological variables, including hostility, negative emotion, and self-regulation. This is consistent with earlier studies that highlight the long-term impact of cyberbullying on victims' emotional regulation and personality development in addition to its impact on their mood states [29]. Furthermore, with high betweenness centrality, anger and hostility (ICU14_C10_bs) and shame and guilt (ICU13_C9_bs) were found to be the main bridging variables. This suggests that they serve as psychological linkages between mental health outcomes and social experiences (such as communication or perceptions of fairness). These results are in line with earlier research that suggests emotional reactivity mediates the way that young adults and adolescents perceive online harassment [30].

X. LIMITATIONS AND FUTURE WORK

It is important to recognize several limitations even though this study offers insightful information about the networked structure of psychological traits and cyberbullying experiences. Initially, the study relies on cross-sectional data, which restricts the capacity to make inferences regarding causality. It's still unclear which way cyberbullying and mental health outcomes are related.

Second, all of the measures were self-reported, which raises the risk of bias due to social desirability and erroneous self-evaluation. Another drawback is the sample's demographic scope, which might not be typical of larger populations in terms of socioeconomic status, age, or culture. This limits how broadly the results can be applied. Furthermore, although they may have a substantial impact on cyberbullying behaviour and psychological health, some external factors—such as the family environment, peer pressure, or media exposure—were left out of the analysis. To overcome these constraints, future studies should use longitudinal data to monitor changes over time and more precisely determine causality. The external validity of the results would be enhanced by using a more representative and varied sample. Incorporating platform-specific factors and taking into account how digital environments influence behaviour are also advised. Furthermore, real-time cyberbullying detection and prevention may be made possible by the application of cutting-edge technologies like machine learning. A more thorough grasp of the problem would be provided by extending the model to incorporate environmental, social, and educational factors. These enhancements would support the creation of successful intervention strategies and increase the research's practical relevance [31].

XI. CONCLUSIONS

Using network analysis to highlight important psychological variables and their relationships, this study investigated the complex relationship between cyberbullying and mental health. The results show that cyberbullying is a complex phenomenon that is intricately linked to behavioural, emotional, and personality traits. Anger, shame, guilt, and neuroticism were among the variables that stood out as key nodes in the network, highlighting their crucial influence on the mental health outcomes of victims of cyberbullying. Crucially, the study also found that positive attributes like autonomy, self-acceptance, and healthy relationships may act as buffers against the harmful impacts of cyberbullying. These findings lend credence to the need for all-encompassing interventions that prioritize enhancing psychological health and emotional resilience in addition to stopping cyberbullying. Beyond straightforward cause-and-effect models, the network-based methodology employed in this study provides a comprehensive understanding of the psychological terrain surrounding cyberbullying. Our methods for protecting mental health in virtual environments must grow along with digital communication. The results presented here set the stage for further investigation and real-world initiatives to create safer, more encouraging online spaces for all users, particularly young people and adolescents who are particularly at risk.

XII. ACKNOWLEDGMENTS

Sincere thanks are extended by the author to all the people and organizations that helped to finish this study. A special thank you to the faculty and academic mentors for their unwavering support, helpful criticism, and encouragement during the research process. Additionally, gratitude is given to the participants who gave up their time to provide important data, without which this study would not have been feasible. The availability of scholarly materials and research instruments that allowed for in-depth examination and interpretation of the results is another reason the author is grateful. Lastly, a special thank you to family and peers for their constant encouragement, tolerance, and support during the writing of this paper.

XIII. DATA AVAILABILITY

Upon reasonable request, the corresponding author will provide the data supporting the study's conclusions. To preserve participant confidentiality, some sensitive information may be anonymized or withheld due to ethical and privacy concerns. To discuss data sharing arrangements, researchers can get in touch with the author if they want to access the dataset for non-commercial or academic purposes.

REFERENCES

- [1] N. Kumar and S. S. Sathya, "Density-Based Spatial Clustering with Noise—A Survey," *Int. J. Compute. Sci. Mobile Compute.*, vol. 3, no. 3, pp. 1004–1012, Mar. 2014.
- [2] R. Prakriti, S. S. Sathya, and N. Kumar, "Ontology Assisted Data Mining and Pattern Discovery Approach: A Case Study on Indian School Education System," *Adv. Nat. Appl. Sci.*, vol. 9, no. 6, pp. 555–561, 2015.
- [3] N. Kumar and S. S. Sathya, "An Ontology Assisted Framework Co-Location Pattern Mining," *Int. J. Compute. Eng. Appl.*, vol. 9, Special Issue, pp. 287–296, 2015.
- [4] N. Kumar and S. S. Sathya, "EGGS: E-News Geo-Parsing and Geocoding for Spatial Information Visualization," *Int. J. Control Theory Appl.*, vol. 9, no. 3, pp. 1507–1516, 2016.
- [5] N. Kumar and S. S. Sathya, "Clustering Assisted Co-Location Pattern Mining for Spatial Data," *Int. J. Appl. Eng. Res.*, vol. 11, no. 2, pp. 1386–1393, 2016. [6]
- [6] S. S. Sathya, S. Sharmila devi, R. Sakthipriya, and N. Kumar, "Taxonomy of Colocation Pattern Mining Techniques," *Int. J. Intell. Eng. Syst.*, vol. 115, no. 6, pp. 159–164, 2017.
- [7] S. Sharmila devi, S. S. Sathya, and N. Kumar, "CONNEXT: Co-located Nearest Neighbour Search using KNN Querying with KD Tree," *Int. J. Recent Technol. Eng.*, vol. 8, no. 2, pp. 1164–1171, Jul. 2019.

- [8] S. Sivakumar, D. Haritha, N. Sree Ram, N. Kumar, G. R. Krishna, and A. Dinesh Kumar, "Attention-Based Convolution Bidirectional Recurrent Neural Network for Sentiment Analysis," *Int. J. Decis. Support Syst. Technol.*, vol. 14, no. 1, pp. 1–21. [Online]. Available: <http://doi.org/10.4018/IJDSST.300368>
- [9] N. H. Priya and N. Kumar, "Expert Robotic System in Image Processing Technique using UiPath Deep Learning (RPA)," *Int. J. Sci. Res. Eng. Manag.*, vol. 6, no. 11, Nov. 2022.
- [10] A. Kumar, C. Upadhyay, N. Kumar, et al., "Soft Computing Based Parametric Optimization of Cutting Rate, Surface Roughness, and Kerf Width in Wire Electric Discharge Machining of High Strength Ti-3Al-2.5 V," *Exp. Tech.*, vol. 48, pp. 537–558, 2024. [Online]. Available: <https://doi.org/10.1007/s40799023-00681-x>
- [11] S. R. K. Indarapu, S. Vodithala, N. Kumar, S. Kiran, S. N. Reddy, and K. Dorthi, "Exploring human resource management intelligence practices using machine learning models," *J. High Technol. Manag. Res.*, vol. 34, no. 2, 2023, Art. no. 100466. [Online]. Available: <https://doi.org/10.1016/j.hitech.2023.100466>.
- [12] N. Kumar and S. S. Sathya, "COPMOC: Co-location Pattern Mining Using Map Overlay and Clustering Techniques," in *Proc. Int. Conf. Informatics Analytics*, ACM, 2016.
- [13] S. Nimmagadda, S. Sivakumar, N. Kumar, and D. Haritha, "Predicting Airline Crash due to Birds Strike Using Machine Learning," in *Proc. 2020 7th Int. Conf. Smart Struct. Syst. (ICSSS)*, Chennai, India, 2020, pp. 1–4, doi: 10.1109/ICSSS49621.2020.9202137.
- [14] C. Karthikeyan, E. Sreedevi, N. Kumar, E. Vamsidhar, T. R. Kumar, and D. V. Babu, "Cost Optimization in Neural Network using Whale Swarm Algorithm with Batched Gradient Descent Optimizer," in *IOP Conf. Ser.: Mater. Sci. Eng.*, vol. 993, 2020, doi: 10.1088/1757-899X/993/1/012047.
- [15] . Pornari and J. Wood, "Peer and cyber aggression in secondary school students: The role of moral disengagement, hostile attribution bias, and outcome expectancies," *Aggressive Behavior*, vol. 36, no. 2, pp. 81–94, 2010.
- [16] R. S. Tokunaga, "Following you home from school: A critical review and synthesis of research on cyberbullying victimization," *Computers in Human Behavior*, vol. 26, no. 3, pp. 277–287, 2010.
- [17] L. C. Freeman, "Centrality in social networks conceptual clarification," *Social Networks*, vol. 1, no. 3, pp. 215–239, 1978.
- [18] M. E. J. Newman, *Networks: An Introduction*, Oxford University Press, 2010.
- [19] S. Wasserman and K. Faust, *Social Network Analysis: Methods and Applications*, Cambridge University Press, 1994.
- [20] P. Bonacich, "Power and centrality: A family of measures," *American Journal of Sociology*, vol. 92, no. 5, pp. 1170–1182, 1987.
- [21] R. Hinduja and J. W. Patchin, *Cyberbullying: Identification, Prevention, and Response*, Cyberbullying Research Center, 2015.
- [22] D. Schultze-Krumbholz et al., "Emotional reactions to cyberbullying: The role of perpetrator and victim gender and age," *Journal of Adolescence*, vol. 41, pp. 39–47, 2015.
- [23] M. R. Kowalski, S. P. Limber, and P. W. Agatston, *Cyberbullying: Bullying in the Digital Age*, Wiley-Blackwell, 2012.
- [24] C. Ryff and B. Singer, "Know thyself and become what you are: A eudaimonic approach to psychological well-being," *Journal of Happiness Studies*, vol. 9, pp. 13–39, 2008.
- [25] D. L. Espelage and S. M. Swearer, "A social-ecological model for bullying prevention and intervention," in *Bullying in North American Schools*, Routledge, 2010, pp. 61–72.
- [26] J. T. Nocentini et al., "Cyberbullying: Labels, behaviors and definition in three European countries," *Australian Journal of Guidance and Counselling*, vol. 20, no. 2, pp. 129–142, 2010.
- [27] B. D. Mittelstadt and L. Floridi, "The ethics of big data: Current and foreseeable issues in biomedical contexts," *Science and Engineering Ethics*, vol. 22, no. 2, pp. 303–341, 2016.
- [28] M. Zimmer, "But the data is already public: On the ethics of research in Facebook," *Ethics and Information Technology*, vol. 12, no. 4, pp. 313–325, 2010.
- [29] A. Malin and L. Sweeney, "Protecting privacy in research data," *ACM Queue*, vol. 1, no. 8, pp. 52–63, 2003.
- [30] American Psychological Association, *Ethical Principles of Psychologists and Code of Conduct*, APA, 2017.
- [31] N. Kumar, S. S. Sathya, and S. Sharmiladevi, "Spatio-Temporal Co-location Pattern Mining using Event-based Clustering Technique," *International Journal of Advanced Computer Science and Applications (IJACSA)*, vol. 10, no. 7, pp. 123–130, 2019. doi: 10.14569/IJACSA.2019.0100717.



10.22214/IJRASET



45.98



IMPACT FACTOR:
7.129



IMPACT FACTOR:
7.429



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)