

Path-analytic investigation on moderating impact of cyberbullying on mental Health and academic wellbeing of teenagers' in Owerri Municipal Imo State, Nigeria

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Abstract

This study used path-analytical methods in investigating moderating impact of cyberbullying on mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria. The study adopted ex-post facto research design. Participants for this study were seven hundred and fifteen (715) purposively selected cyberbullied teenage students from 20 public secondary schools who have undergone counselling therapeutic session with their school counsellors. Ten questionnaires were used for data collection and three research questions answered. Data were analyzed using a causal modeling technique that involved multiple regression, backward solution and path analysis at 0.05 level of significance. Result revealed that cyberbullying has 43% moderating impact on the mental health and academic wellbeing of cyberbullied teenagers. The beta (β) weights of the paths (Paths coefficients) give the estimates of the strengths of the causation of moderating impact of cyberbullying on relationship anxiety as ($\beta = 0.21; <0.001$), self-esteem ($\beta = 0.19; p<0.001$), interest in schooling ($\beta = 0.09, p<.05$), sleep disturbance ($\beta = 0.08; p>.05$), substance abuse ($\beta = 0.07; p>.05$), suicidal ideation ($\beta = -0.05; p>.05$), readiness to learn ($\beta = -0.04; p>.05$), study habit ($\beta = -0.03; p>.05$) and truancy ($\beta = -0.01; p>.05$). Cyberbullying has a total direct effect of 63.05% and indirect effect of 36.95% on the mental health and academic wellbeing of teenagers. Students should be given appropriate orientation of the negative implication of cyberbullying on their mental health and academic wellbeing

Keywords: Academic wellbeing; Cyberbullying; Interest in school; Relationship anxiety; Self-esteem; Teenagers

1. Introduction

The incredible benefits associated with the advancement in information communication technology making the world a global village cannot be overemphasized. However, the rapid systemic digitalization and ease of communication and relationship building through social media connectivity has also caused substantial negative challenges to human health, safety and security due to devastating occurrence of cyberbullying. And presently, the engagement of teenagers in act of cyberbullying is gradually becoming a distressing global socio-endemic phenomenon with compounding negative implication on their life orientation and general wellbeing. Cyberbullying seen as an act of violent harassment, intimidation, verbal threats, sexual abuse, posting of disparaging remarks about an individual on social network web site, blackmail or taunts from people while chatting via the internet and committed using various social media internet platforms has been well documented (Okoije, Nwoga & Onah; 2015; Oliver, 2024; Usman, 2024). Previous researchers Nixon (2014); Okoije, et al., (2015) and Isabella (2024) established that the occurrence of cyberbullying among teenagers' have taken an unprecedented dangerous dimension and has consequently become an issue of global concern and public discuss. These researchers affirmed that violence associated with cyberbullying has incredible psycho-socio-emotional effect on teenagers' wellbeing. This implies that the associated danger of cyberbullying on teenagers'

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developmental wellbeing is no longer an isolated issue but a pandemic capable of impairing their mental health and academic wellbeing in profoundly negative ways.

Ayukosok and Daru (2025) affirmed that within Africa, one in every three teenagers has experienced some kind of cyberbullying. And this is because the nature of cyberbullying as a phenomenon has significantly advanced in its mode of occurrence over time due to advance improvement in global digitalization and widespread use of technological digital devices and internet connectivity. This has made it possible for cyberbullying to occur beyond the bounds of space and time as it can occur at anywhere or anytime without effective adult supervision. Also, it is of note that the secrecy attached to the occurrence of cyberbullying makes it an exceptionally harmful experience that often leave victims helpless, down casted and psychologically traumatized (Kowalski et al., 2014). Globally, cyberbullying has grown into a pandemic that threatens the dignity of human sanity due to unguarded abuse and harassment that often make victims express feelings of helplessness, low self-esteem, anxiety, anger, depression, thought of committing suicide, etc, (Okoije, et al., 2015; Oliver, 2024). However, to the best of researchers' knowledge, there is paucity of path-analytical research study on effect of cyberbullying on the mental health and academic wellbeing of teenagers in Nigeria. This makes path-analytic investigation on moderating impact of cyberbullying on mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing (interest in school, study habit, truancy and readiness to learn) of teenagers' in Owerri Municipal Imo State Nigeria germane to bridge this research gap.

2. Literature Review

2.1. Suicidal Ideation

The thought of committing suicide or having pondering ideas over the possibility of dying via suicide is termed suicidal ideation (West, 2024; World Health Organization, 2020). Suicidal ideation implies an individuals' expressing of feelings to put an end to their own life (Okoije & Onah 2026). It epitomizes a life-threatening mental health concern and is often an antecedent to suicide attempts and completed suicides. Suicidal ideation often manifests via a person's thoughts of putting an end to his or her life (Harmer et al., 2024; Okoije & Onah, 2026). Suicidal ideation is a vital mental health issue of significant concern (Harmer et al., 2024). It has devastating outcomes if not addressed appropriately (Harmer et al., 2024). Suicidal ideation can occur due to environmental stressors such as sexual molestation, bullying, cyberbullying, etc, (Okoije & Onah 2026). Research reports concerning cyberbullying indicates that its experience threatens the general wellbeing of victims and contribute significantly to teenagers' mental health challenges, academic failure and dropout from school (Okoije, et al., 2015; Raskauskas & Stoltz, 2007). The findings of Peprah, et al., (2023) study on effect of cyberbullying victimization on wellbeing of teenagers in Argentina, Panama, St Vincent, and the Grenadines established that the prevalence of suicidal ideation among teenagers that have experienced cyberbullying was (38.4%). Also, Okoije and Onah (2026) found that the prevalence rate of expressed suicidal ideation among male and female university freshers in Owerri, Imo State Nigeria is 50.57% for male and 49.43% for female. Alavi et al (2017) posit that teenagers who experience cyberbullying were 19 times very likely to contemplate committing suicide. Cyberbullying drives teenagers more on suicidal ideation than physical bullying (Tabares et al., 2024). Perret et al (2020) longitudinal study on 2120 individuals for a period of 17 years, established that teenagers who have experienced cyberbullying are very more likely to express suicidal ideation and attempts. This risk remained regardless of prior traditional bullying experiences, family or mental health challenges. The devastating consequences of cyberbullying on teenagers' mental health continues to be of vital concern to global community. For example, Mohd et al., (2022) stated that United Nations Children's Fund (UNICEF) report affirmed that in 2022, one-third of over 170,000 teenagers and emerging adults in 30 countries who are victims of cyberbullying expressed suicidal ideation and attempted committing suicide. Tabares, et al., (2024) findings revealed that globally, suicidal ideation due to cyberbullying experience among students in diverse region is 30.2% in South America, Central America 22%; North America 31.7%; Europe and Caribbean 25%; Middle East 41.1%; North Africa 42.7% and Sub-Saharan Africa 48.2% to which Nigeria is inclusive.

2.2. Relationship Anxiety

Teenagers' trust in their ability to negotiate and sustain friendly relationship can be an incredibly interesting life developmental milestone experience due to its associated psycho-socio-emotional nourishing impact on their general wellbeing. Anyanwu, Okoije and Urien (2026) averred that trust is a vital element in all forms of human social interaction. Positively toned relationship based on trust and respect makes the life space of teenagers' colourful and enterprisingly full of warmth and relished sense of belongingness, acceptance, happiness and being loved. It is essentially an evolving asset that drives interaction among at least two individuals, each of whom trusts the other in a reciprocal manner established through communication. Ideally, trust represents the affective and cognitive states of people involved in relationships. However, in present day digital world, cyberbullying can mar these experiences. For example, Sabharwal (2026) stated that cyberbullying devastate relationship and causes emotional distress, relationship

distrust and anxiety. Kim et al, (2017) hypothesized that among teenagers' the common socio-psychological problem triggered by cyberbullying is relationship anxiety. Cyberbullying causes social relationship dysfunctionality in teenagers (Coelho & Romão, 2018). Relationship anxiety impairs teenagers' quality of life (Sun et al., 2024). Teenagers' relationship anxiety triggered by cyberbullying experience make them lack trust in interpersonal relationship building, afraid of online relationship, feel rejected, become lonely and withdrawn (Sun et al., 2024). Relationship violence among students' is a distressing experience that has an intense negative implication on the mental health and general wellbeing of victims as it impairs their ability to socialize in a healthy manner and have a fulfilled and happy scholarly life experience (Okoie & Adebisi, 2024).

2.3. Self-Esteem

Okoie and Asamaigo (2011) posit that deficit in student's self-esteem can lead to expressed helplessness and poor adjustment to teaching and learning situation in classroom. These more often than not, could have some negative impact not only on the mental and academic wellbeing of these students, but also on significant others and society as it causes behavioural problems in students and frustration in other concern individuals. A person's level of self-esteem is determined by the extent to which the person self-appraise, appreciate and value him or herself. If a person sees him or herself as a worthy individual, of high dignity, or special no matter the circumstance at play, that kind of person is said to have high self-esteem. And if contrary, the person is said to have low self-esteem. Self-esteem is a socio-psychological construct that is associated with positivity, success, happiness, progress, harmonious relationship, etc. However, cyberbullying experience can make teenagers feel less appreciated, dejected, of less worth and eventually express low self-esteem. Brewer and Kerslake (2015); Burger and Kerslake (2021) stated that cyber bullied teenagers express low self-esteem, become school truants, perform poorly in academic task, lonely and socially maladjusted. Hinduja and Patchin (2010) found negative correlation between cyber victimization and teenagers' self-esteem. Cyberbullied teenagers exhibit impaired mental health and socio-self-worth. According to Okeke and Anierobi (2020) teenagers' exposure to cyberbullying communication enhances their expression of aggressive anti-social behaviour that negatively affect their self-esteem. Ali and Shahbuddin (2022) stated that cyberbullying correlates negatively with teenagers' self-esteem and general developmental wellbeing.

2.4. Sleep Disturbance

Quality sleep pattern is required for teenagers' healthy growth and development. However, literature documents that the experience of cyberbullying is associated with sleep disturbance among teenagers and it impairs their sleep duration and quality (Walsh et al., 2020). Sleep problem due to psychological distress among teenagers as a result of toxic interpersonal relationship on digital social media platforms in the like of cyberbullying is established by (Kwon et al., 2020). Also, Chu (2020); Rzewnicki et al., (2020) stated that cyber related bullying correlates negatively with experience of high sleep disturbance among cyberbullied teenagers. One of the downward consequences of cyberbullying on teenagers is disturbed sleep and lack of quality sleep (Herge et al., 2015; Sampasa-Kanyinga et al., 2022). Cyberbullying triggers negative sense of being, low self-worth, dejection, anger and consequently, poor sleep among teenagers (Jose & Vierling, 2018). similarly, the bidirectional relationship between cyberbullying, psychosocial and emotional distress and impairs sleep pattern, with poor sleep equally predicting future psychopathology (Kortesoja, et al., 2020).

2.5. Substance Abuse

Substance abuse is a vital risk-factor associated with the effect of cyberbullying on teenagers' mental health and general well-being (Nagata et al., 2022). Cyberbullied teenagers reportedly engaged in the used of cannabis, cigarette smoking and alcohol as antidote to relieve stressed tension (Boccio et al., 2022). Romualdo et al (2025) investigated the connection between cyberbully experience and high rate of drug abuse, mental health challenges and gender difference among 146,000 Brazilian adolescents. They found that a 13.3% of participants of 17 years said they experienced cyberbullying within 30 days before the survey and this development underscores the prevalent nature of cyberbullying. Also, 22% of cyberbullied adolescents reported using alcohol and other addictive drugs as coping mechanism to cushion their distressed state of mind as a result of online harassment. Furthermore, Romualdo et al (2025) found that 38.1% of the cyberbullied adolescents were boys and 61.9% were female. This indicates that female adolescents are more vulnerable to being cyberbullied and, have the tendency to engage more in substance use than their male counterparts. Similarly, systematic review by Biagioli et al (2023) study on cyberbullying among teenagers aged 10 to 20 years, examined 50 studies and found a strong correlation between cyberbullying and drug use, most notably tobacco and alcohol use. Regarding illicit substances, marijuana exhibited the most significant association with cyberbullying. Also, the study reported that female cyberbullied victims established higher tendency for smoking, binge drinking, alcohol consumption and non-prescription medication use (e.g., benzodiazepines).

2.6. Interest in School

Stopbullying.gov (2025) report revealed that cyberbullying among teenagers' is linked to several negative consequences, which includes increased risks of interpersonal relationship anxiety disorder, drug abuse, depression, suicide ideation lack of interest in school learning activities. These experiences often lead to decreased academic attainment, like lower standardized test scores, GPA, and participation in school activities. Affected teenagers are often likely to skip, miss or drop out of school. Strøm et al (2018) posit that cyberbullying negatively affects students' social adaptability capacity in school, increase exhibition of anti-social problematic behaviour and equally impair their interest in school engagement. Cyberbullied adolescents often display difficulties in building social connectivity, have a higher risk of not wanting to attend school and it affects their psychosocial-intellectual well-being and academic performance (Halliday et al., 2021).

2.7. Study Habit

Naturally, cyberbullying attacks inhibits victims learning desire and impair their intellectual wellbeing (Hoff & Mitchell, 2009). Cyberbullied teenage victims may experience a variety of emotional instability that can have negative impact on their study habit and concentration in school (Schenk & Fremouw, 2012). Negative perceptions of cyberbullying create cognitive disorientation and study habit challenges for teenage students as they constantly feel dejected, helpless and emotionally distressed (Dredge et al., 2014). Chukwuere et al. (2021), who studied the psychosocial effects of social media in African countries, found that cyberbullying had educational implications. The study revealed that student's victim of social media abuse misses' classes, develop poor study habit, quit school, and dislike comprehending information connected with school, learning and teaching experience. interactions with other learners because they had been bullied on social. Poor study habit put secondary school students at academic-risk (Okoiye & Falaye, 2011; Okoiye, et al., 2017).

2.8. Truancy

Huang (2022) affirmed that cyberbullied teenagers often express poor academic performance and truancy behaviour. Gordon (2024) stated that the psycho-emotional and cognitive distress cyberbullied teenage learners experienced during social media chats with their school peers make them feel school is not safe, angered, frustrated, skip school in other to avoid facing school peers that are cyberbullying them and exhibit a high rate of school absenteeism. Consequently, they find it difficult to pay attention in class, record low grades and become demotivated to further their education after secondary school (Gordon, 2024). Meghar (2022) found that cyberbullying decreased school attendance, learning enthusiasm and enhances poor academic attainment among affected students in Algeria.

2.9. Readiness to learn

According to Okoiye, Olakunle and Okoiye (2025) readiness to learn is a strong personality trait that showcases students' resilience and is particularly useful in stormy academic learning situation and can enhance fruitful learning experience and increase academic performance. However, the experience of cyberbullied teenagers can be life-threatening because it makes them disorientated and have negative reservation towards learning (Rasheed & Tashtoush, 2023). Aggression associated with cyberbullying ignites fear, discomfort, apprehension, and reluctance to learn or participate in classroom teaching and learning activities (Rasheed & Tashtoush, 2021; Wardat, Jarrah, & Stoica, 2021). Cyberbullying is a significant phenomenon that impairs students' willingness to learn and encourages truancy, and anti-social aggressive behaviour (Wardat, Jarrah, & Stoica, 2021). Teenage students' perseverance, resilience, psycho-emotional readiness to learn decline with the intensity of cyberbullying experienced (Nisu et al., 2023).

2.10. Theoretical Framework for the Study

The frequent occurrence of cyberbullying among teenagers across the globe can be aligned to the systemic influence of environmental stimuli. Perpetrators having observed that teenage cyberbullies are often not apprehended and made to face justice in Nigeria tend to see it as normal way of life for the Gen Zee generation. This development serves as positive reinforcing mechanism that spur them to equally engage in act of cyberbullying. Based on this context, the theoretical framework of this study is anchored on Social Learning Theory of Albert Bandura. This theory emphatically explains that people acquire and express new behaviour through observation and imitating other peoples' behavioural dispositions. The postulations of Social Learning Theory states that learning is cognitive incline and occurs in a social context purely through observation or direct instruction or through the observation of rewards and punishments, a process known as vicarious reinforcement (Bandura, 1977). When a particular behaviour is consistently rewarded, it will most likely persist; conversely, if a particular behaviour is constantly punished, it will most likely desist (Bandura, 1977). Presently, cyberbullying is on the increase in Nigeria because nobody is punished for it.

2.11. Statement of the Problem

Teenage victims of cyberbullying often express impaired state of mental health. This is because of the frustrating, dehumanizing vicious harassment and life-traumatic cyberbullying experience they consistently encounter using internet digital communication system that threatens their life space from other online internet users via social media platforms such as Instagram, Facebook, Twitter, WhatsApp, Tiktok, etc. For example, Usman (2024) investigative report affirmed that globally, one in six teenagers are victims of cyberbullying with devastating experience(s) such as receiving derogatory messages, getting their nude pictures posted without their consent or receiving blackmail threat of having their videos or images posted online. This development has detrimental impact on teenagers' health and developmental wellbeing from the range of self-harm to suicidal ideation (Usman, 2024). This makes the focus of this study significant.

2.12. Purpose of the Study

This study is focused on using path-analytical methods in investigating moderating impact of cyberbullying on mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing (interest in school, study habit, truancy and readiness to learn) of teenagers' in Owerri Municipal Imo State Nigeria. And to specifically investigate the:

- Extent to which cyberbullying moderately impact on the mental health and academic wellbeing of cyberbullied teenagers in Owerri Municipal Imo State Nigeria.
- Strength of the causal paths of cyberbullying on the mental health and academic wellbeing of cyberbullied teenagers in Owerri Municipal Imo State Nigeria.
- Direct and indirect effects of cyberbullying on the mental health and academic wellbeing of teenagers in Owerri Municipal Imo State Nigeria.

2.13. Research Questions

To what extent do cyberbullying moderately impact on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?

What is the estimate of the strength of causation of the cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?

What is the total proportion of the (i) direct effect and (ii) indirect effect of cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?

3. Methods

3.1. Research Design

This study adopted the ex-post facto research design. It is a type of design that seeks to establish cause and effect relationships, of which the researcher usually has no control over the variables of interest, and therefore cannot manipulate them.

3.2. Population

The population for this study consists of teenaged secondary school students in public secondary schools in Owerri Municipal Imo State Nigeria.

3.3. Participants

The participants for this study consisted of seven hundred and fifteen (715) teenage secondary school students comprising of (305 boys) 42.66% and (410 girls) constituting 57.34% of the total participants. The age range of the participants is between 12 and 17 years. The mean and standard deviation of their ages were 2.7 and 3.3 years.

3.4. Sample and Sampling Technique

The participants for this study were seven hundred and fifteen teenage secondary student that have experienced cyberbullying and have undergone counselling therapeutic sessions with their school resident counsellors in Owerri Municipal Imo State Nigeria. They were purposively selected from twenty public secondary school in Owerri Municipal.

3.5. Instrumentation

The instruments used for the study were adopted questionnaires. They include the following:

- Cyber Bullying Prevalence Questionnaire (CBPQ) (Rigby & Slee, 1999) was used to measure cyber bullying experience of teenage secondary school student used for the study. It is a 20-item instrument that has been reliably used by diverse researchers. It has items such as: I have been harassed by people on internet; People I chat with on social media often intimidate me, etc. The instrument has a reliability coefficient of 0.84.
- Suicidal Ideation Attributes Scale (Van Spijk et al., 2014) was used to measure suicidal thoughts and its severity among cyberbullied teenagers. It consists of five items, each targeting an attribute of suicidal thoughts: level of distress associated with the thoughts, impact on daily functioning, frequency, controllability and closeness to attempt suicide. It is a 3-point scale. Higher response score reflects more severe suicidal thoughts. It has a high internal consistency (Cronbach alpha = 0.91).
- Dating Anxiety Scale for Adolescents (DAS-A) (Glickman & La Greca, 2004) was used to measure relationship anxiety of cyberbullied secondary school teenagers used for the study. It assesses fear of negative evaluation in dating situations; social distress when interacting with real or potential dating partners and social distress when in a group of mixed-sex peers. It is a 5-point Likert Scale with internal consistency (Cronbach alpha = 0.81).
- Rosenberg's self-esteem scale (RSE) (1965) was used to measure self-esteem of cyberbullied teenagers. It is a 10-item self-report scale that requires respondents to indicate their perceptions of themselves in positive or negative ways. It is a 4-point Likert scale with response format ranging from (4 = strongly agree, 3 = agree, 2 = disagree and 1 = strongly disagree) with higher total scores indicating a stronger self-esteem. It has a reliability coefficient range of 0.85 to 0.88.
- Sleep Disturbance Scale (Bruni, et al., 1996) for Children was used to measure sleep disturbance among cyberbullied teenagers used for the study. It is 27 item Likert-type rating scale. It has items such as: I have difficulty getting sleep at night; I wake up more than twice at night; I am afraid to fall asleep at night; etc. The internal consistency is (0.79).
- Substance Abuse Scale (Straus et al., 2010) was used to measure cyberbullied teenage secondary school students use of drugs. It consists of 8-items with two subscales—alcohol and other drugs. The scale has a Likert-type response format of 1 = strongly disagree to 4 = strongly agree. Scores on all items are summed resulting in a possible score of 8 to 32, with higher scores indicative of higher levels of substance abuse. It has reliability coefficient of Cronbach's α of .90.
- The interest in schooling scale was used as a measure of was used to measure cyberbullied teenage students' interest in school. It was developed by Umoinyang (1999). The scale has 10 items, measuring interest in schooling on a four likert response format ranging from strongly agree (4) to strongly disagree (1). The students' personal interest, situational interest, meaningfulness of schooling, involvement in school work, homework, assignment among others is measured by the items. The two weeks test retest of the instrument revealed a reliability co-efficient alpha of 0.81; the split half reliability index is 0.95. The original scale has 15 items. It has a Cronbach reliability co-efficient alpha of 0.93; and the split half reliability index is 0.79
- The Study Habits Inventory (SHI) (Bakare, 1977) was used to measure students study habit. It is a self-reporting inventory which gives respondents the opportunity to describe their study habit learning experience during normal and stressed situations. It is a 45-item inventory with sub sections on: (i) homework and assignments; (ii) time allocation; (iii) reading and note taking; (iv) study period procedures; (v) concentration; (vi) written work; (vii) examination; (viii) teacher consultation. It has a reliability coefficient of 0.83.
- Truancy was measured using School Attendance Behaviour Rating Scale (SABRS) by Okoije, Ukoha and Adebisi, (2021). It is a 7-item scale that measures truancy behaviour of cyberbullied teenage students. The items were developed on a 4-point modified Likert format. It has items such as: I do not attend school regularly because: My classmates bully me via internet calling me names and making fun of me when I speak in the class; I feel ashamed when my peers cyberbully me due to my inability to pronounce words correctly in class; I feel frustrated when my peers cyberbully me due to my inability to read in class when asked to read by my teacher etc. This Scale was validated through a pilot study using test-re-test method and a split-half coefficient alpha value of 0.83 was recorded.
- Academic Attitude Scale (AAS) by Handelsman, et al (2005) was used as a measure of students' readiness to learn. The scale was devised to measure student's readiness to learn in school and be engaged with academic activities. It has 13 items with response format ranging from (1) strongly disagree to (4) strongly agree. The reliability co-efficient alpha of the scale is $r = 0.74$.

3.6. Procedure for Administration and Data collection

The administration of the questionnaires lasted for six weeks. The researchers visited the twenty public secondary schools in Owerri Municipal in Imo State Nigeria. Before administering the questionnaires, the researchers sought permission from the school authorities of the participants. To facilitate and ensure successful administration of the instruments, the purposively selected participants were informed about the importance of the study and their need to participate. The researchers due to the voluminous nature of the questionnaires, divided the questionnaires into two (2) sets, and administered the first set to the participants on the first day of each visit. After the administration of the first sets of the questionnaires to the participants on the first day at each of the selected schools, the researchers went and administered the second set of the questionnaires to the same participants the following day. The names and class of the participants were collected and adequately coded. This enabled the researchers to identify the participants on the following day and administered the second set of the questionnaires on them. The reason for this was to ensure the convenience of the participants in filling the questionnaires. Thus, they were encouraged to be sincere in responding to the questionnaires.

3.7. Data Analysis

Data collected was analyzed using a causal modeling technique that involved multiple regression, backward solution and path analysis. Path-Analysis helped in identifying the total effects, i.e. direct and indirect effect of cyberbullying on the mental health (suicidal ideation, social isolation, relationship anxiety, substance abuse, self-esteem) and (interest in school, study habit, truancy and readiness to learn) academic wellbeing of teenagers.

3.8. Multiple Regression Analysis

Multiple regression analysis was used to determine the moderating effect of the criterion variable cyberbullying (X9) on the nine independent variables (X0, X1, X2, X3, X4, X5, X6, X7 and X8). The criterion variable was therefore regressed on each of the nine explanatory variables (X0, X1, X2, X3, X4, X5, X6, X7 and X8). The regression equation is: $X9 = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8$. Here b_0 - b_9 are the regression weights that represent the moderating effect of cyberbullying (X9) on the independent variables (X0.....X8). However, since correlation could only suggest co-variation, there was the need to ascertain the causal linkage or relationship among the variables. Hence, this demanded that the researchers employed the use of Path Analysis technique.

3.9. Path Analysis

Path Analysis technique was employed with a view to enabling the researchers study the effects, both direct and indirect, of cyberbullying (X9) on (X0.....X8) variables. Also, the confirmatory causal Modeling Technique was used in Hypothesizing and selecting the "correct" theoretical causal model that shows causal relationship among the study variables; constructing the structural equations associated with the arrow diagrammes; and identifying and trimming the path of the model using the criteria of significance ($p < .05$) and meaningfulness ($p < .05$).

3.10. Confirmatory Hypothesized Causal Model

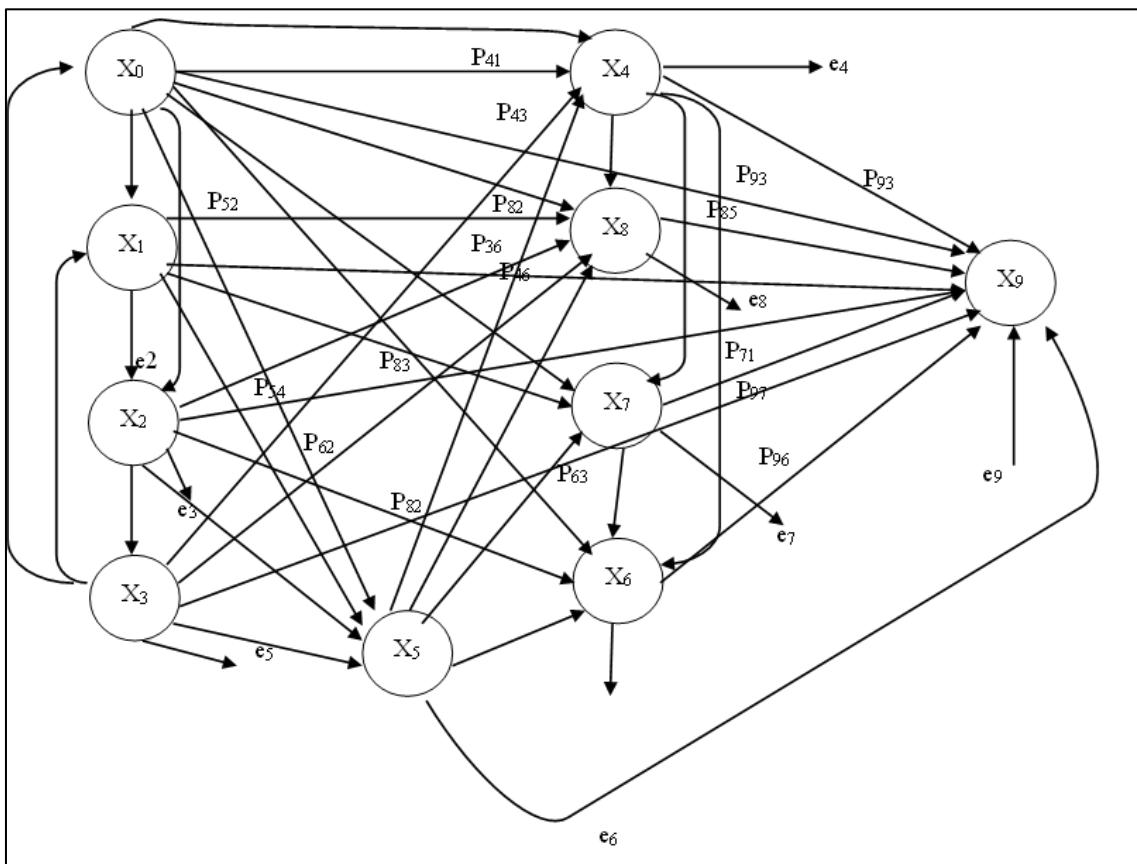


Fig 1 shows the hypothesized causal model relating Suicidal ideation, Relationship anxiety, Self-esteem, Sleep disturbance, Substance abuse, Interest in school, Study habit, Truancy, Readiness to learn with Cyberbullying

X0 = Suicidal ideation; X1 = Relationship anxiety; X2 = Self-esteem; X3 = Sleep disturbance; X4 = Substance abuse; X5 = Interest in school; X6 = Study habit; X7 = Truancy; X8 = Readiness to learn; X9 = Cyberbullying

Figure 1 Hypothesized Causal Model

4. Results

This study provides a causal explanation of the moderating impact of cyberbullying on mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing (interest in school, study habit, truancy and readiness to learn) of teenagers' in Owerri Municipal Imo State Nigeria.

4.1. Research Question 1

To what extent do cyberbullying moderately impact on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?

To provide answer to this question, multiple regression analysis of moderating impact of cyberbullying on the mental health and academic wellbeing of teenagers were carried out. The moderating impact of cyberbullying (exogenous variable) on the mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing of teenagers (interest in school, study habit, truancy and readiness to learn) (nine endogenous variables) is shown in Table1

Table 1 Multiple Regression Analysis Showing Moderating Impact of Cyberbullying on the Mental Health and Academic Wellbeing of Teenagers

Model	SS	Df	MS	F	R	R ²	P
Regression	11015.09	9	1223.90	12.65	0.55	0.43	<.001
Residual	68209.41	705	96.75				
Total	111218.88	714					

Table 1, above showed that cyberbullying has a high moderating impact on the mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing of teenagers (interest in school, study habit, truancy and readiness to learn) of cyberbullied teenagers $F(9, 714) = 12.65$ $R^2 = 0.43$; $p < 0.001$. Cyberbullying has 43% moderating impact on the mental health and academic wellbeing of cyberbullied teenagers.

4.2. Research Question 2

What is the estimate of the strength of causation of the cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?

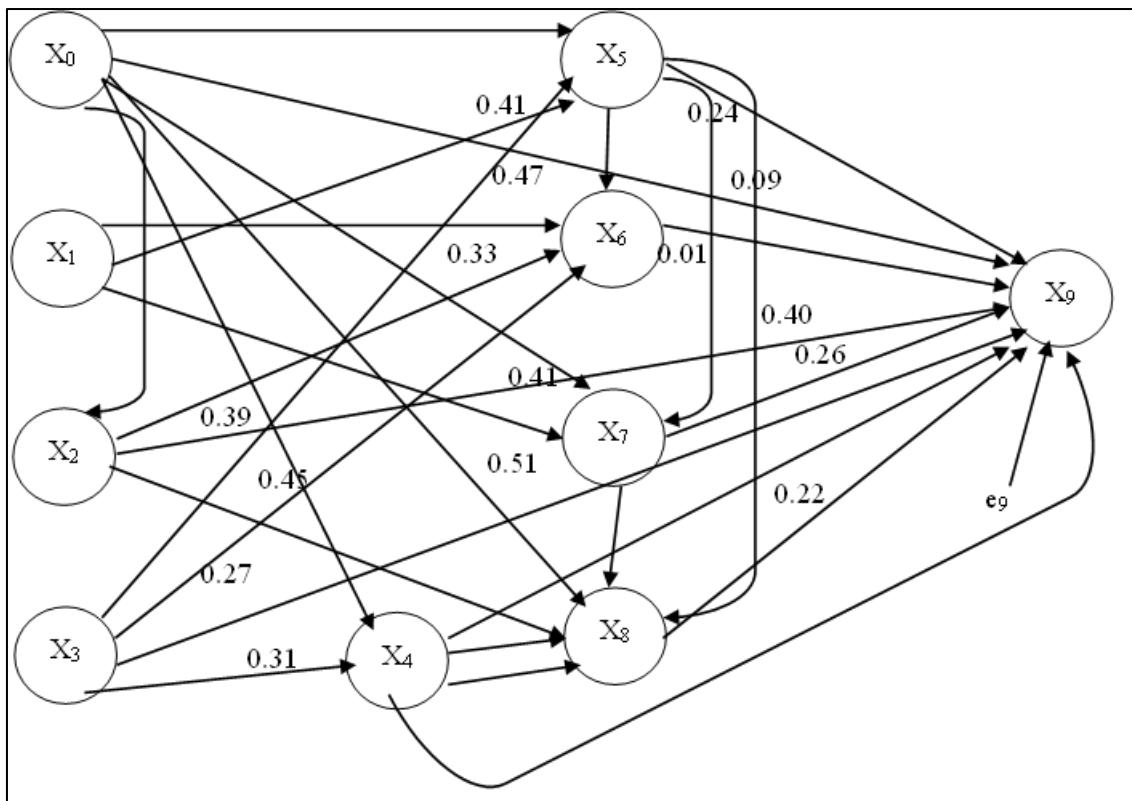
Table 2 Multiple Regression Analysis Showing the Moderating Impact of Cyberbullying on the Mental Health and Academic Wellbeing of Teenagers

Model	B	STD Error	β	T	P	Sig.	Rank
Truancy	-0.91	0.32	-0.00	-0.05	0.96	>.05	9 th
Readiness to Learn	-0.37	0.53	-0.03	-0.07	0.57	>.05	7 th
Suicidal Ideation	0.31	0.17	-0.05	-1.58	0.19	>.05	6 th
Self-Esteem	0.33	0.09	0.19	3.29	0.000	< 0.05	2 nd
Study Habit	-4.41	0.05	-0.03	-0.57	0.57	>.05	8 th
Substance Abuse	0.21	0.07	0.07	1.61	0.10	>.05	5 th
Interest in schooling	0.25	0.08	0.09	2.08	0.000	<.05	3 rd
Sleep Disturbance	0.37	0.05	0.08	1.65	0.09	>.05	4 th
Relationship Anxiety	0.58	0.06	0.21	5.10	0.000	< 0.05	1 st

Table 2 results indicates that the beta (β) weights of the paths (Paths coefficients) and it gives the estimates of the strengths of the causation of moderating impact of cyberbullying on the mental health and academic wellbeing of cyberbullied teenagers. Cyberbullying made the highest moderating impact on teenagers' relationship anxiety ($\beta = 0.21$; <0.001). This is followed in magnitude of beta weights by self-esteem ($\beta = 0.19$; $p < 0.001$), while interest in schooling came next ($\beta = 0.09$, $p < .05$); sleep disturbance ($\beta = 0.08$; $p > .05$); substance abuse ($\beta = 0.07$; $p > .05$); suicidal ideation ($\beta = -0.05$; $p > .05$); readiness to learn ($\beta = -0.04$; $p > .05$); study habit ($\beta = -0.03$; $p > .05$); and truancy ($\beta = -0.01$; $p > .05$). This implies that cyberbullying experience has negative moderating impact on the mental health and academic wellbeing of cyberbullied teenagers. This order could be summarized as: Relationship anxiety > Low self-esteem > Lack of interest in schooling > Sleep disturbance > Substance abuse > Suicidal ideation > Lack of readiness to learn > Study habit > Truancy.

4.3. Research Question 3

What is the total proportion of the (i) direct effect and (ii) indirect effect of cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria?



From the more parsimonious model showing the significant Paths in Fig. 2 above there are new structural equations as presented below.

X0 = Suicidal ideation; X1 = Relationship anxiety; X2 = Self-esteem; X3 = Sleep disturbance; X4 = Substance abuse; X5 = Interest in school; X6 = Study habit; X7 = Truancy; X8 = Readiness to learn; X9 = Cyberbullying

Figure 2 The more Parsimonious Hypothesized Causal Model Correlation showing significant paths among the nine Variables

Table 3 Proportions of Total (i) Direct effect and (ii) Indirect effect of Cyberbullying on the Mental Health and Academic Wellbeing of Teenagers'

Criterion	Independent variables	Total effects	%	Direct Effect	%	Indirect Effects	%
	X0 – X8	A		B		C	
	X0	0.09	3.61	0.09	3.61	0.00	0.00
	X1	0.41	16.47	0.31	12.45	0.09	3.61
	X2	0.36	14.46	0.23	9.24	0.13	5.22
	X3	0.27	10.84	0.11	4.42	0.11	4.42
X9	X4	0.31	12.45	0.14	5.62	0.11	4.42
	X5	0.24	9.64	0.21	8.43	0.10	4.02
	X6	0.33	13.25	0.19	7.63	0.15	6.02
	X7	0.26	10.44	0.17	6.83	0.10	4.02
	X8	0.22	8.84	0.12	4.82	0.13	5.22
Total		2.49	100	1.35	63.05	1.02	36.95

Table 3 shows the total (direct and indirect) effects of cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria. The percentage of cyberbullying total direct effect is 63.05% and

indirect effect is 36.95% on the mental health and academic wellbeing of teenagers used for the study. However, for X0 (Suicidal ideation) the proportion of the total direct effect was 3. 61%, while indirect effect was 0.00%. X1 (Relationship anxiety) direct effect was 12.45% while indirect was 3.61%. X2 (Self-esteem) direct effect was 9.24% while indirect was 5.22%. X3 (Sleep disturbance) direct effect was 4.42% while indirect was 4.42%. X4 (Substance abuse) direct effect was 5.62% while indirect was 4.42%. X5 (Interest in school) direct effect was 8.43% while indirect was 4.02%. X6 (Study habit) direct effect was 7.63% while indirect was 6.02%. X7 (Truancy) direct was 6.83% while indirect was 4.02% and X8 (Readiness to learn) direct effect was 4.82% while indirect effect was 5.22%. This indicates that cyberbullying has serious compounding negative effect on the mental health and academic wellbeing of teenagers used for this study.

5. Discussions of Findings

5.1. Research Question 1

To what extent do cyberbullying moderately impact on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria? The answer to research question one as shown in table 1 revealed that cyberbullying has a high moderating impact on the mental health (suicidal ideation, relationship anxiety, self-esteem, sleep disturbance, substance abuse) and academic wellbeing of teenagers (interest in school, study habit, truancy and readiness to learn) of cyberbullied teenagers $F(9, 714) = 12.65$ $R^2 = 0.43$; $p < 0.001$. Cyberbullying has 43% moderating impact on the mental health and academic wellbeing of cyberbullied teenagers. Previous researchers Nixon (2014); Okoiye, et al., (2015) and Isabella (2024) established that the occurrence of cyberbullying among teenagers' have taken an unprecedented dangerous dimension. For example, research reports concerning cyberbullying indicates that its experience threatens the general wellbeing of victims and contribute significantly to teenagers' mental health challenges, academic failure and dropout from school (Okoiye, et al., 2015; Raskauskas & Stoltz, 2007). The findings of Peprah, et al., (2023) study on effect of cyberbullying victimization on wellbeing of teenagers in Argentina, Panama, St Vincent, and the Grenadines established that the prevalence of suicidal ideation among teenagers that have experienced cyberbullying was (38.4%). Also, Okoiye and Onah (2026) found that the prevalence rate of expressed suicidal ideation among male and female university freshers in Owerri, Imo State Nigeria is 50.57% for male and 49.43% for female. Sabharwal (2026) stated that cyberbullying devastate relationship and causes emotional distress, relationship distrust and anxiety. Burger and Kerslake (2021) stated that cyber bullied teenagers express low self-esteem, become school truants, perform poorly in academic task, lonely and socially maladjusted. Also, Chu (2020); Rzewnicki et al., (2020) stated that cyber related bullying correlates negatively with experience of high sleep disturbance among cyberbullied teenagers. Substance abuse is a vital risk-factor associated with the effect of cyberbullying on teenagers' mental health and general well-being (Nagata et al., 2022). Cyberbullied adolescents often display difficulties in building social connectivity, have a higher risk of not wanting to attend school and it affects their psychosocial-intellectual well-being and academic performance (Halliday et al., 2021). Naturally, cyberbullying attacks inhibits victims learning desire and impair their intellectual wellbeing (Hoff & Mitchell, 2009). Huang (2022) affirmed that cyberbullied teenagers often express poor academic performance and truancy behaviour. The experience of cyberbullied teenagers can be life-threatening that it makes them disorientated and have negative reservation towards learning (Rasheed & Tashtoush, 2023).

5.2. Research Question 2

What is the estimate of the strength of causation of the cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria? Table 2 results indicates that the beta (β) weights of the paths (Paths coefficients) give the estimates of the strengths of the causation of moderating impact of cyberbullying on the mental health and academic wellbeing of cyberbullied teenagers. Cyberbullying made the highest moderating impact on teenagers' relationship anxiety ($\beta = 0.21$; $p < 0.001$). Kim et al, (2017) hypothesized that among teenagers' the common socio-psychological problem triggered by cyberbullying is relationship anxiety. Cyberbullying causes social relationship dysfunctionality in teenagers (Coelho & Romão, 2018). This is followed in magnitude of beta weights by self-esteem ($\beta = 0.19$; $p < 0.001$). This indicates that cyberbullying experience can make teenagers feel less appreciated, dejected, of less worth and eventually express low self-esteem. Hinduja and Patchin (2010) found negative correlation between cyber victimization and teenagers' self-esteem. while interest in schooling came next ($\beta = 0.09$, $p < .05$), in support, Stopbullying.gov (2025) report revealed that cyberbullying among teenagers' is linked to several negative consequences, which includes increased risks of interpersonal relationship anxiety disorder, drug abuse, depression, suicide ideation lack of interest in school learning activities. These experiences often lead to decreased academic attainment, like lower standardized test scores, GPA, and participation in school activities. Affected teenagers are often likely to skip, miss or drop out of school. Sleep disturbance ($\beta = 0.08$; $p > .05$), literature documents that the experience of cyberbullying is associated with sleep disturbance among teenagers and it impairs their sleep duration and quality (Walsh et al., 2020). Sleep problem due to psychological distress among teenagers as a result of toxic interpersonal

relationship on digital social media platforms in the like of cyberbullying is established by (Kwon et al., 2020). Substance abuse ($\beta = 0.07$; $p>.05$); literature document that cyberbullied teenagers reportedly engaged in the used of cannabis, cigarette smoking and alcohol as antidote to relieve stressed tension (Boccio et al., 2022). Romualdo et al (2025) investigated the connection between cyberbully experience and high rate of drug abuse, mental health challenges and gender difference among 146,000 Brazilian adolescents. They found that 22% of cyberbullied adolescents reported using alcohol and other addictive drugs as coping mechanism to cushion their distressed state of mind as a result of online harassment. Suicidal ideation ($\beta = -0.05$; $p>.05$); Alavi et al (2017) posit that teenagers who experience cyberbullying were 19 times very likely to contemplate committing suicide. Cyberbullying drives teenagers more on suicidal ideation than physical bullying (Tabares et al., 2024). Readiness to learn ($\beta = -0.04$; $p>.05$); it is of note that aggression associated with cyberbullying ignites fear, discomfort, apprehension, and reluctance to learn or participate in classroom teaching and learning activities (Rasheed & Tashtoush, 2021; Wardat, Jarrah, & Stoica, 2021). Study habit ($\beta = -0.03$; $p>.05$); cyberbullied teenage victims may experience a variety of emotional instability that can have negative impact on their study habit and concentration in school (Schenk & Fremouw, 2012). Negative perceptions of cyberbullying create cognitive disorientation and study habit challenges for teenage students as they constantly feel dejected, helpless and emotionally distressed (Dredge et al., 2014) and truancy ($\beta = -0.01$; $p>.05$). Gordon (2024) stated that the psycho-emotional and cognitive distress cyberbullied teenage learners experienced during social media chats with their school peers make them feel school is not safe, angered, frustrated, skip school in other to avoid facing school peers that are cyberbullying them and exhibit a high rate of school absenteeism. This implies that cyberbullying experience has negative moderating impact on the mental health and academic wellbeing of cyberbullied teenagers.

5.3. Research Question 3

What is the total proportion of the (i) direct effect and (ii) indirect effect of cyberbullying on the mental health and academic wellbeing of teenagers' in Owerri Municipal Imo State Nigeria? As show in table 3 above, the findings of the study revealed that the percentage of cyberbullying total direct effect is 63.05% and indirect effect is 36.95% on the mental health and academic wellbeing of teenagers used for the study. This corroborates the affirmation of Ayukosok and Daru (2025) that within Africa, one in every three teenagers has experienced some kind of cyberbullying. And this is because the nature of cyberbullying as a phenomenon has significantly advanced in its mode of occurrence over time due to advance improvement in global digitalization and widespread use of technological digital devices and internet connectivity. This has made it possible for cyberbullying to occur beyond the bounds of space and time as it can occur at anywhere or anytime without effective adult supervision. Also, it is of note that the secrecy attached to the occurrence of cyberbullying makes it an exceptionally harmful experience that often leave victims helpless, down casted and psychologically traumatized (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). However, for X0 (Suicidal ideation) the proportion of the total direct effect was 3. 61%, while indirect effect was 0.00%. This indicates that cyberbullying has grown into a pandemic that threatens the dignity of human sanity due to unguarded abuse and harassment that often make victims express feelings of helplessness, low self-esteem, anxiety, anger, depression, thought of committing suicide, etc., (Okoije, et al., 2015; Oliver, 2024). X1 (Relationship anxiety) direct effect was 12.45% while indirect was 3.61%. Relationship anxiety impairs teenagers' quality of life (Sun et al., 2024). Teenagers' relationship anxiety triggered by cyberbullying experience make them lack trust in interpersonal relationship building, afraid of online negotiating relationship, feel rejected, become lonely and withdrawn (Sun et al., 2024). X2 (Self-esteem) direct effect was 9.24% while indirect was 5.22%. According to Okeke and Anierobi (2020) teenagers' exposure to cyber communication enhances expression of aggressive anti-social behaviour that negatively affect their self-esteem. Ali and Shahbuddin (2022) stated that cyberbullying correlates negatively with teenagers' self-esteem and general developmental wellbeing. X3 (Sleep disturbance) direct effect was 4.42% while indirect was 4.42%. One of the downward consequences of cyberbullying on teenagers is disturbed sleep and lack of quality sleep (Herge et al., 2015; Sampasa-Kanyinga et al., 2022). Cyberbullying triggers negative sense of being, low self-worth, dejection, anger and consequently, poor sleep among teenagers (Jose & Vierling, 2018). X4 (Substance abuse) direct effect was 5.62% while indirect was 4.42%. In support, systematic review by Biagiioni et al (2023) study on cyberbullying among teenagers aged 10 to 20 years, examined 50 studies and found a strong correlation between cyberbullying and drug use, most notably tobacco and alcohol use. Regarding illicit substances, marijuana exhibited the most significant association with cyberbullying. X5 (Interest in school) direct effect was 8.43% while indirect was 4.02%. Strøm et al (2018) posit that cyberbullying negatively affects students' social adaptability capacity in school, increase exhibition of anti-social problematic behaviour and equally impair their interest in school engagement. X6 (Study habit) direct effect was 7.63% while indirect was 6.02%. Chukwuere et al. (2021), who studied the psychosocial effects of social media in African countries, found that cyberbullying had educational implications. The study revealed that students' victim of social media abuse misses' classes, develop poor study habit, quit school, and dislike comprehending information connected with school, learning and teaching experience. interactions with other learners because they had been bullied on social. X7 (Truancy) direct was 6.83% while indirect was 4.02%. Meghar (2022) found that cyberbullying deceased school attendance, learning enthusiasm and enhances poor academic attainment mong affected students in Algeria. And X8

(Readiness to learn) direct effect was 4.82% while indirect effect was 5.22%. Cyberbullying is a significant phenomenon that impairs students' willingness to learn and encourages truancy, and anti-social aggressive behaviour (Wardat, Jarrah, & Stoica, 2021). Teenage students' perseverance, resilience, psycho-emotional readiness to learn decline with the intensity of cyberbullying experienced (Nisu et al., 2023). This indicates that cyberbullying has serious compounding negative effect on the mental health and academic wellbeing of teenagers used for this study.

6. Conclusion

The outcome of this study highlights the fact that teenagers experience of cyberbullying has substantial compounding negative challenges on their mental health and academic wellbeing. And presently, the engagement of teenagers in act of cyberbullying is gradually becoming a distressing socio-endemic phenomenon with adverse implications on their rational being and life orientation. This development calls for concern and the need to put machinery in place that would ensure that communication space is safe for use by all and teenagers are protected from cyber attack

Recommendations

- Students should be given appropriate orientation of the negative implication of cyberbullying on their mental health and academic wellbeing.
- Students should be given adequate information on the gain associated with seeking counselling service intervention as a means of developing the ability to overcome the negative challenges associated with cyberbullying.
- Parents should be vigilant to keep good watch over their children internet usage life-style in order to monitor, mentor and make sure they use internet facility appropriately
- Secondary school authorities should ensure that counselling service that would help students develop the capacity to live in harmony with other people in line with the norms of the society are made available to students.

Compliance with ethical standards

Disclosure of conflict of interest

We declare that no conflict of interest is associated with the conduct of this study.

Statement of ethical approval

The ethical approval for the conduct of this study was granted on October 8th 2025 with code number (REC/EDUPSY/G&C/00249)

Statement of informed consent

The consent of the participants was attained. Also, the conduct of this study aligned to the detailed procedures set by Research Ethical Committee Board of the Department of Educational Psychology/Guidance & Counselling of Alvan Ikoku Federal University of Education Owerri, Imo State Nigeria.

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