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Article

Impact of bullying behaviors on mental health among adolescents: An analysis of interpersonal relationships in school settings

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Abstract: This study examines aggressive behavior among adolescents in school settings, focusing on its associations with mental health dimensions such as dysfunctional negative emotions and anxiety. A total of 403 adolescents (234 girls and 169 boys) aged 12 and 13 years participated in the study. Self-report questionnaires assessed aggressive tendencies and mental health symptoms, while demographic variables such as age and gender were also collected. Data analysis revealed a non-normal distribution, as determined by the Kolmogorov-Smirnov and Shapiro-Wilk tests. Consequently, non-parametric statistical methods were employed, including the Spearman correlation coefficient to explore relationships between variables and the Mann-Whitney *U* test to analyze gender differences. The results demonstrated significant positive correlations between aggressive behavior and dysfunctional negative emotions ($r = 0.191$, $p < 0.01$) and between aggression and anxiety ($r = 0.275$, $p < 0.01$). Additionally, gender differences emerged, with females reporting higher levels of mental health symptoms than males ($p < 0.05$). These findings highlight the complex relationship between mental health challenges and aggression, emphasizing the significant roles of gender and emotional regulation in shaping these dynamics. The study calls for the development of tailored psychological interventions that not only address aggressive behaviors but also consider the unique mental health needs and emotional profiles of adolescents, ensuring a more personalized and effective approach to support their well-being.

Keywords: bullying; dysfunctional negative emotions; anxiety; mental health; adolescents; school settings

1. Introduction

Bullying represents a pressing public health concern within school environments, profoundly impacting adolescents' mental health and overall well-being. Defined as intentional, repetitive aggression—whether physical, verbal, or psychological—bullying is marked by a power imbalance between aggressor and victim (Gredler, 2003). It has been consistently linked to a spectrum of mental health issues, including depression, anxiety, post-traumatic stress symptoms, and even suicidal ideation (Arseneault et al., 2010; Hawker and Boulton, 2000; Iovu et al., 2020). Given that schools serve as critical social arenas where adolescents form relationships and shape

their identities, they become pivotal settings for studying the repercussions of bullying on mental health.

Adolescence is a developmental stage characterized by profound biological, cognitive, and emotional transformations, during which social interactions play a crucial role in identity formation and psychological adjustment (Patton et al., 2016). Within the school environment, interpersonal relationships—whether with peers, teachers, or other authority figures—are instrumental in shaping adolescents' responses to bullying. Emerging evidence indicates that these relationships can either exacerbate or mitigate the adverse effects of bullying on mental health, influencing self-perceptions, emotional regulation, and social behaviors (Rivers et al., 2009; Swearer et al., 2010).

This study examines the complex relationship between bullying behaviors and mental health in adolescents, focusing on the influence of interpersonal relationships within the school setting. By synthesizing findings from existing literature and empirical research, it seeks to enhance our understanding of how bullying experiences affect mental health and the moderating role of social relationships in this context. This research contributes to the growing body of work advocating for targeted interventions that address both the behavioral and relational aspects of bullying, highlighting the importance of supportive school environments in fostering adolescent well-being.

2. Literature review section

2.1. General studies on bullying

Bullying has been widely acknowledged as a pervasive and multifaceted issue in school environments, with far-reaching consequences for adolescents' psychological and emotional well-being. It is defined as deliberate, repetitive aggression that exploits an imbalance of power between the perpetrator and the victim. This behavior manifests in various forms, including physical violence, verbal taunts, social exclusion, and cyberbullying. The prevalence of bullying among adolescents highlights its role as a significant public health concern and a critical focus of psychological research.

Hawker and Boulton (2000) conducted a meta-analysis exploring the relationship between bullying and mental health outcomes. Their findings revealed that adolescents subjected to bullying were significantly more likely to experience psychological disorders, including depression, anxiety, and post-traumatic stress symptoms. The study highlighted that victimization does not merely result in short-term distress but can lay the groundwork for chronic psychological conditions, affecting the trajectory of mental health during adolescence and beyond. These findings underline the need for robust early detection mechanisms within schools to identify at-risk students and provide timely interventions.

Arseneault et al. (2010) expanded this understanding by emphasizing the cumulative impact of bullying over time. Their research demonstrated that exposure to bullying during childhood and adolescence correlates strongly with an increased prevalence of mood disorders and anxiety disorders in later life. This longitudinal perspective underscores the ripple effects of bullying, which extend far beyond the immediate school years. Victimized adolescents often carry the emotional scars of

these experiences into adulthood, manifesting as difficulties in interpersonal relationships, occupational instability, and a higher risk of mental health disorders.

In a similar vein, Copeland et al. (2013) conducted a longitudinal study examining the long-term consequences of bullying. They found that individuals who experienced bullying during adolescence exhibited a higher likelihood of mental health challenges as adults, even after accounting for other childhood adversities. Notably, these adverse outcomes were not confined to the victims; perpetrators and bully-victims (those who are both perpetrators and victims) also demonstrated poorer mental health trajectories. This underscores the complexity of bullying dynamics, suggesting that all individuals involved in bullying may require psychological support to address their unique vulnerabilities.

The consistent evidence linking bullying to psychological distress highlights the urgent need for comprehensive prevention and intervention strategies. School-based programs that address bullying behaviors, foster inclusivity, and promote emotional resilience are essential in mitigating the harmful effects of bullying.

2.2. The impact of bullying on mental health

Bullying significantly disrupts adolescents' mental health, affecting their emotional stability, social functioning, and cognitive development. Victimization during these formative years is often accompanied by acute psychological distress, including heightened feelings of fear, helplessness, and shame. Over time, these experiences can lead to persistent mental health challenges, such as anxiety disorders, depressive symptoms, and difficulties in emotional regulation. Espelage and Holt (2001) observed that adolescents exposed to bullying frequently face obstacles in building and maintaining healthy interpersonal relationships. This often manifests as social withdrawal, heightened isolation, and diminished self-esteem—factors that can perpetuate a cycle of vulnerability. In this cycle, psychological distress reduces adolescents' capacity to seek and engage in supportive social interactions, further intensifying their emotional and social difficulties.

The relational impact of bullying is particularly significant. Victimized adolescents often struggle to trust others, which impairs their ability to form meaningful connections. This lack of trust, combined with a heightened sense of rejection, may exacerbate feelings of loneliness and contribute to the internalization of negative self-perceptions. These patterns can persist into adulthood, reinforcing long-term difficulties in relationships and contributing to mental health problems, such as chronic anxiety and depressive disorders.

Research highlights the critical role of supportive interpersonal relationships in mitigating these adverse outcomes. Rivers et al. (2009) and Swearer et al. (2010) provided compelling evidence that positive relationships with peers and teachers serve as protective buffers against the psychological impact of bullying. These relationships foster resilience by providing a sense of belonging and validation, which are crucial for adolescents navigating social challenges. Adolescents who feel supported by their peers and trusted adults in the school environment are more likely to develop adaptive coping strategies, reducing the emotional burden associated with bullying.

Rigby (2003) further emphasized the importance of a supportive school culture in alleviating the mental health consequences of bullying. His findings indicate that adolescents who perceive their school environment as nurturing and inclusive are less likely to experience severe symptoms of depression and anxiety, even when exposed to bullying. This underscores the need for systemic approaches that prioritize the cultivation of safe and supportive spaces for adolescents. Peer support programs, teacher training on recognizing and addressing bullying, and policies promoting inclusivity can play vital roles in reducing the psychological toll of bullying.

In addition to fostering supportive environments, interventions that enhance social and emotional skills can empower adolescents to navigate the complexities of bullying more effectively. These interventions may include training in conflict resolution, emotional regulation, and assertiveness. By equipping adolescents with these skills, schools can help them build resilience and minimize the long-term mental health effects of bullying.

2.3. Mediators and moderators in the relationship between bullying and mental health

Recent research has shed light on mediators and moderators that influence the complex relationship between bullying and adolescent mental health. Mediators explain how or why bullying leads to mental health outcomes, while moderators identify factors that can alter the strength or direction of these effects. Understanding these mechanisms is crucial for designing effective interventions to mitigate the psychological consequences of bullying.

Individual factors such as coping strategies, emotional regulation, and resilience significantly mediate the impact of bullying on mental health. Adolescents with adaptive coping mechanisms, such as problem-solving and seeking support, are better equipped to handle the stress associated with victimization, reducing its negative effects on their emotional well-being. Conversely, maladaptive coping strategies, including avoidance or substance use, often exacerbate psychological distress and increase vulnerability to long-term mental health issues. Resilience, defined as the ability to recover and adapt in the face of adversity, plays a crucial role in buffering the emotional and psychological impact of bullying. Resilient adolescents are more likely to perceive bullying as a challenge they can overcome, which diminishes its harmful effects on self-esteem and mental health.

Contextual factors, including perceived social support and the overall school climate, serve as critical moderators in the relationship between bullying and mental health. Salmivalli (2010) emphasized that perceived social support from peers and teachers provides a sense of belonging and emotional safety, which can protect adolescents from the adverse effects of bullying. Supportive relationships act as a buffer, reducing feelings of isolation and helping victims process their experiences in healthier ways.

Cowie (2011) further highlighted the importance of fostering environments that promote psychological safety. Adolescents who feel emotionally safe in their school environment are more likely to seek help and report bullying incidents, which can prevent the escalation of emotional distress. This sense of safety and belonging also

encourages the development of positive self-perceptions and interpersonal trust, which are essential for long-term mental health.

The school climate—defined by the quality of relationships, norms, and values within a school community—plays a pivotal role as both a moderator and a target for interventions. A positive school climate characterized by inclusivity, respect, and support can reduce the prevalence of bullying and its associated mental health consequences. Hong and Espelage (2012) stressed the importance of cultivating a safe and welcoming school environment to counteract the negative impacts of bullying. Programs that emphasize empathy, kindness, and conflict resolution can significantly enhance the school climate, creating a culture where bullying is less likely to thrive.

Effective interventions address both individual and contextual factors to break the cycle of bullying and its psychological repercussions. Swearer et al. (2010) proposed comprehensive strategies that integrate social and emotional learning, peer support programs, and teacher training to enhance students' coping skills and interpersonal relationships. These interventions not only reduce bullying behaviors but also promote mental health by equipping adolescents with the tools to navigate challenging social situations.

For instance, programs that teach emotional regulation and conflict resolution help adolescents build resilience and manage their responses to bullying more effectively. Similarly, initiatives that strengthen peer and teacher support networks provide a critical safety net for victims, fostering a sense of connection and belonging. These strategies are most effective when implemented within a broader framework that prioritizes a positive school climate, ensuring that all students benefit from an environment conducive to psychological well-being.

3. Research objective and research questions

The overall objective is to study the extent to which there are significant differences in the manifestation of dysfunctional negative emotions, anxiety, and mental health symptoms in adolescents in school settings. Furthermore, we aim to study the extent to which aggressive manifestations towards victims have an influence on the prevalence of mental health symptoms in adolescents.

Research question 1 (RQ1): Are there significant differences in the manifestation of dysfunctional negative emotions by gender, in the sense that females tend to score higher than males?

Objective 1: To investigate gender differences in manifesting dysfunctional negative emotions.

The literature provides significant evidence of gender differences in the manifestation of dysfunctional negative emotions, suggesting that females tend to report higher levels of these emotions than males. Dysfunctional negative emotions, such as anxiety, depression, and stress, are often studied in the context of gender differences, and research has consistently shown a higher prevalence of these states among women (Matud, 2004; Nolen-Hoeksema, 2012). Longitudinal and cross-sectional studies have shown that adolescent girls and women are more prone to depression and anxiety than boys and men of the same age. For example, studies such as the one by Piccinelli and Wilkinson (2000) have shown that from adolescence

onwards, the prevalence of depression becomes about twice as high in females as in males, a difference that persists throughout life. The study of Zahn-Waxler et al. (2008) also supports this trend and found significant differences in the prevalence and manifestation of depressive symptoms and anxiety, with women frequently reporting higher levels of emotional distress.

Another relevant issue in the literature concerns the cognitive and emotional mechanisms that might explain these differences. Nolen-Hoeksema (2012) proposes the rumination theory, according to which women tend to ruminate more on problems and negative emotions than men, which may contribute to the intensification and maintenance of negative emotional states. In addition, Matud (2004) emphasizes that women are more likely to perceive stress as a personal threat and display stronger emotional reactions to stressful situations than men, who tend to have a more pragmatic and problem-solving-oriented approach.

Social and cultural factors may also influence gender differences in the manifestation of dysfunctional negative emotions. For example, Hyde's (2014) study highlights that gender norms and societal expectations are essential in how men and women express and manage emotions. Women are traditionally encouraged to express emotions such as sadness and anxiety. In contrast, men are discouraged from displaying emotional vulnerability, which may lead to reported differences in the manifestation of these emotional states.

Research question 2 (RQ2): Are there significant differences in the manifestation of anxiety symptoms by gender, in the sense that females tend to score higher than males?

Objective 2: To examine gender differences in the manifestation of anxiety symptoms.

The literature consistently supports significant gender differences in the manifestation of anxiety symptoms, suggesting that females tend to score higher on measures of anxiety than males. This finding is well-documented in psychological and epidemiological research, which highlights an increased prevalence of anxiety disorders among females, beginning in adolescence and continuing into adulthood (Lewinsohn et al., 1998; Mclean et al., 2011). Epidemiological studies show that anxiety disorders, including generalized anxiety, panic disorder, and social phobia, are more common among women than men. Mclean et al. (2011) conducted an extensive meta-analysis of anxiety disorders and found that women are twice more prone than men to be diagnosed with an anxiety disorder. This difference can be observed in both clinical and non-clinical populations, suggesting a robust tendency in the manifestation of anxiety symptoms depending on gender.

The reasons for this difference are multiple and complex, including biological, psychological, and social factors. For example, studies suggest that hormonal differences, such as those related to estrogen and progesterone, may contribute to women's increased vulnerability to anxiety, particularly during periods of hormonal fluctuations (Parker and Brotchie, 2010). In addition, psychological factors, such as gender-differentiated coping styles, may influence the manifestation of anxiety; women are more likely to adopt emotion-oriented coping strategies, such as rumination, which may amplify anxiety states (Nolen-Hoeksema, 2012).

In addition to biological and psychological differences, social and cultural factors also play an essential role. Social norms may influence the reporting of anxiety symptoms, as women may be more encouraged to express their emotional vulnerability. In contrast, men may be discouraged from displaying such symptoms, which may lead to underreporting of anxiety among men (Eagly and Wood, 2013). Studies have also shown that women are more frequently exposed to stressful interpersonal experiences and traumatizing life events, which may contribute to an increased prevalence of anxiety symptoms (Kessler et al., 1994).

Research question 3 (RQ3): Are there significant differences in the manifestation of health symptoms by gender, in the sense that females tend to score higher than males?

Objective 3: To investigate gender differences in the manifestation of mental health symptoms.

The literature consistently points to significant gender differences in the manifestation of health symptoms, showing that females tend to report more frequently and score higher than males on a variety of physical and mental health symptoms. This trend is present in numerous studies examining self-reported health and clinical diagnoses (Case and Paxson, 2005; Hunt et al., 2011).

Epidemiological studies show that women report a higher prevalence of symptoms such as chronic pain, fatigue, migraines, and digestive disorders. Women also have a higher incidence of autoimmune diseases and musculoskeletal conditions such as fibromyalgia and irritable bowel syndrome compared to men (Stovner et al., 2007). These differences can be attributed to both biological and psychosocial factors.

Biologically, hormonal differences, such as fluctuations in estrogen and progesterone, may contribute to women's greater susceptibility to certain types of pain and discomfort (Berkley, 1997). These hormonal fluctuations may affect pain sensitivity and stress response, explaining the higher incidence of specific symptoms and conditions among women (Fillingim et al., 2009). On the other hand, psychosocial factors also play a significant role in the manifestation of gender differences in health symptoms. Women are more likely to express somatic symptoms and seek health care, partly because of gender norms and socialization that encourage the expression of distress and care needs (Verbrugge, 1985). In addition, studies show that women are more exposed to chronic stressors and stressful life experiences, such as multiple responsibilities (family and work) and more frequent exposure to gender-based violence, which may contribute to higher perception and reporting of health symptoms (Kessler, 2003; Matud, 2004). Cultural factors and access to health services also influence gender differences in the manifestation of health symptoms. Women are more likely to use health services, which may lead to more frequent diagnoses of health problems (Case and Paxson, 2005). At the same time, women may report symptoms more frequently than men because of the lower stigma associated with recognizing physical or mental distress among women.

Research question 4 (RQ4): Is there a positive relationship between victim aggression and the prevalence of mental health problems?

Objective 4: To examine the association between victim aggression and the prevalence of mental health problems in adolescents.

The literature indicates a significant positive relationship between aggression towards victims and the prevalence of mental health problems among both aggressors and victims. Research has demonstrated that aggression, defined as intentional behavior to cause physical, emotional, or psychological harm to another person, is associated with multiple mental health problems, including depression, anxiety, post-traumatic stress disorder, and suicidal ideation (Arseneault et al., 2010; Hawker and Boulton, 2000).

Studies suggest that victimization by aggression has a direct impact on the mental health of those affected. Victims of bullying, whether physical, verbal, or relational, are at significantly increased risk of developing mental health problems. A meta-analysis by Reijntjes et al. (2010) showed that repeated experiences of aggression are strongly associated with symptoms of depression and anxiety. Longitudinal studies also indicate that the adverse mental health effects of bullying may persist in the long term, affecting victims' emotional and social development even into adulthood (Copeland et al., 2013).

At the same time, the literature emphasizes that aggressors can also have mental health problems. Studies show that people who exhibit aggressive behaviors are more likely to have impulsivity, conduct disorder, pathological narcissism, or antisocial personality traits, which in turn are associated with mental health problems such as depression and anxiety (Sourander et al., 2007; Tremblay, 2000). Furthermore, Swearer et al. (2001) found that aggressors who are also victims of other forms of bullying (so-called bully-victims) have the most severe mental health problems, with high levels of stress, depression, and suicidal ideation.

Contextual factors such as social climate and perceived peers and family support may influence the relationship between bullying and mental health. Research suggests that a positive school climate and supportive relationships can reduce the impact of bullying on the mental health of victims, contributing to the development of resilience (Espelage and Swearer, 2003). Early interventions that target both aggressors and victims can also reduce the incidence of mental health problems associated with bullying. Based on the literature review, the following hypotheses were proposed:

H1: Females score significantly higher than males in the manifestation of dysfunctional negative emotions.

H2: Females score significantly higher than males in the manifestation of anxiety symptoms.

H3: Females score significantly higher than males in overall mental health symptoms.

H4: There is a positive relationship between aggressive behavior and the prevalence of mental health problems, including dysfunctional negative emotions and anxiety.

4. Methods

4.1. Participants

This study included a total of 403 adolescents aged 12 to 13 years, recruited from multiple schools. Of the participants, 234 were female (58.1%) and 169 were male (41.9%), reflecting a slight predominance of female participants. Valid percentages,

calculated after excluding any missing cases, confirmed this gender distribution. All participants were successfully categorized into one of two gender groups, with no missing or unclassified cases, ensuring a complete dataset for analysis.

4.2. Instruments

Data collection was conducted using a structured questionnaire designed to assess bullying behaviors and their impact on adolescents' mental health. The questionnaire included 34 items rated on a five-point Likert scale, divided into two primary scales. The first scale, the Bullying Behaviors and Interpersonal Relationships Scale (14 items; $\alpha = 0.83$), measured bullying behaviors and relational dynamics. This scale was further divided into two subscales: Aggressive Manifestations as Victim (7 items; $\alpha = 0.80$), which focused on experiences of victimization, and Aggressive Behaviors as Aggressor (7 items; $\alpha = 0.72$), assessing tendencies to engage in bullying behaviors. The second scale, the Mental Health and Psychological Symptoms Scale (22 items; $\alpha = 0.96$), was designed to measure the frequency and intensity of emotional experiences and psychological symptoms associated with various mental health disorders. This scale was subdivided into two subscales: Emotional Distress Symptoms (11 items; $\alpha = 0.92$) and Anxiety Symptoms (11 items; $\alpha = 0.94$). To validate the structural integrity of the scales, exploratory factor analysis was conducted using the Varimax rotation technique, and internal consistency was assessed through reliability analysis.

4.3. Procedure

The research was conducted with the approval of the administrative bodies of participating schools. Data collection occurred through two modalities: physical distribution of the questionnaire in classrooms and online administration via Google Forms. Students accessed the questionnaire online using a link distributed by their class teacher. Non-probability sampling techniques, including convenience sampling and quota sampling, were employed to recruit participants. These methods ensured a balanced representation of genders within the sample, targeting students in grades 5 and 6 from multiple schools.

4.4. Data analysis

The data analysis began with an assessment of the normality of the variables of interest using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The results indicated that the variables were not normally distributed, necessitating the use of non-parametric statistical methods. The Spearman correlation coefficient was applied to explore relationships between key variables, such as aggressive behaviors and different dimensions of mental health, including dysfunctional negative emotions, anxiety, and overall mental health. Gender-based differences in mental health symptoms and bullying behaviors were analyzed using the Mann-Whitney *U* test, a non-parametric method suitable for comparing two independent groups when normality assumptions are not met. Statistical significance levels and correlation coefficients were interpreted to rigorously test the study's hypotheses and validate its findings.

5. Results

Hypothesis 1. We expect significant gender differences in the manifestation of dysfunctional negative emotions because females score higher than males.

Both tests of normality (Kolmogorov-Smirnov and Shapiro-Wilk) have *p*-values less than 0.05 for both groups (female and male). This indicates that the distribution of dysfunctional negative emotion scores does not follow a normal distribution for the female or the male group. Since the distributions are abnormal, we used a non-parametric test to test the hypothesis.

The Mann-Whitney *U* test results (**Table 1**) suggest significant differences between men and women in the manifestation of dysfunctional negative emotions, with women reporting higher levels of these emotions. The *U*-value of 16,693.500, together with the *Z*-value of −2.51, indicates that there is a significant difference between the two groups. The asymptotic significance value (2-tailed) is 0.01, less than the threshold of 0.05. The psychological analysis of the differences can focus on the specific understanding of each item in the scale used, considering the psychological implications and possible explanations.

Table 1. Test statistics.

	Dysfunctional negative emotions
Mann-Whitney *U*	16,693.500
Wilcoxon *W*	30,889.500
Z	−2.515
Asymp. Sig. (2-tailed)	0.012
a. Grouping Variable: Gender	

Women often report a higher prevalence of feelings of lack of energy or depression, which may be explained by a combination of biological factors such as hormonal fluctuations and psychosocial factors such as pressures associated with multiple roles and social expectations of their behavior. Dysfunctional negative emotions and lack of energy are often correlated with high levels of stress and anxiety, and women are more likely to express and report these emotions in psychological assessment contexts.

Suicidal thoughts are another item where gender differences are evident. Women tend to report suicidal thoughts or ideas more frequently, which may reflect a tendency towards open expression of negative emotions and psychological vulnerability. In contrast, men are less likely to report such thoughts because of gender norms that discourage the expression of vulnerability. However, it is essential to note that while women may have a higher prevalence of suicidal thoughts, men have a higher risk of complete suicide, suggesting differences in the methods used and intentions reported.

The tendency to cry easily is more common in women, as it is an emotional manifestation frequently associated with open expression of sadness and other negative emotional states. Culturally, women are more encouraged to express their emotions through crying, whereas men are often discouraged from doing so. This difference may reflect both learned social norms and differences in emotional regulation processes.

Self-blaming is another negative emotional characteristic more commonly reported by women. Studies suggest that women are more prone to rumination, a repetitive, self-focused, problem-focused, and hostile emotional thinking style that is closely associated with depression and anxiety. This tendency can lead to heightened feelings of self-blame and worthlessness, contributing to a more significant psychological burden.

Feelings of loneliness and sadness are also more commonly reported by women, which may be related to differences in the structure and functioning of social support networks. Women tend to invest more in emotional and social relationships and may feel more acutely the lack of meaningful connections, which can lead to a heightened sense of isolation. Furthermore, women are more susceptible to the negative impact of stressful events and changes in social relationships, which can increase feelings of sadness and loneliness.

Excessive worry about any problem is a characteristic of anxiety, and research shows that women are more likely to exhibit anxiety symptoms. This may reflect differences in how women and men perceive and cope with stress, with women having a greater tendency to ruminate and worry constantly about everyday problems.

Feelings of hopelessness and worthlessness may be correlated with a pessimistic view of the future, more common in women due to cumulative life experiences, including gender discrimination, experiences of inequality, and stresses associated with caring roles. They may also be related to dysfunctional thinking styles, such as negative attribution styles and the tendency to perceive adverse events as internal, stable, and global.

Hypothesis 2. We expect there to be significant differences in the manifestation of anxiety symptoms by gender, in the sense that females tend to score higher than males.

For both groups (female and male), the *p*-values associated with the Kolmogorov-Smirnov and Shapiro-Wilk tests are below the 0.05 significance level, indicating that the distributions of anxiety scores are not parametric. In this context, the hypothesis of normality of the data is rejected for both groups, suggesting that the distribution of anxiety scores differs significantly from a normal distribution, which is why we used the nonparametric Mann-Whitney *U* test.

The *U*-test result (**Table 2**) is 16,826.500, and the *Z* value is −2.46. The asymptotic significance value (2-tailed) is 0.01, below the significance threshold of 0.05.

Table 2. Test statistics.

	Anxiety
Mann-Whitney *U*	16,826.500
Wilcoxon *W*	31,022.500
Z	−2.467
Asymp. Sig. (2-tailed)	0.014
a. Grouping Variable: Gender	

This indicates that there is a statistically significant difference between female and male anxiety scores. The negative Z value (−2.46) suggests that the observed difference is statistically significant in the direction of the research hypothesis, indicating that the female group tends to report higher anxiety scores compared to the male group.

These results support the hypothesis that females tend to have higher levels of anxiety symptoms than males. A combination of biological, psychological, and social factors can explain this difference.

The items included in the anxiety scale reflect both the cognitive and emotional components of anxiety, as well as intense physiological manifestations, such as feeling fear for no apparent reason, panic attacks, palpitations, trembling, muscle tension, and feelings of extreme anxiety. Thus, biological, psychosocial, and cognitive factors may make women more susceptible to stress. Biologically, research suggests that hormonal fluctuations, particularly those related to estrogen and progesterone, can influence sensitivity to stress and fear responses, increasing the likelihood of anxiety symptoms. There is also evidence that the hypothalamic-pituitary-adrenal (HPA) axis, which regulates the stress response, may function differently in women, contributing to heightened stress reactivity and emotional hyperarousal.

Women tend to adopt emotion-oriented coping strategies, such as rumination, which can amplify anxious responses and perceptions of vulnerability. Specific items such as “feeling trapped or locked” or “sensing that something bad is going to happen” indicate a tendency towards catastrophic anticipation and heightened sensitivity to perceived threats, traits more commonly found in women, according to the literature.

Moreover, items describing acute physiological symptoms, such as “palpitations” or “shaking”, may reflect heightened somatic reactions to anxiety, which women perceive and report more often. Women may interpret physical symptoms in a catastrophizing way, which can lead to a vicious cycle of anxiety and self-magnification. In addition, cultural and social norms play a significant role, as women are often more encouraged to express and recognize anxiety symptoms. In contrast, men may be more likely to suppress them due to gender stereotypes related to emotional control.

Hypothesis 3. We expect significant differences in the manifestation of mental health symptoms by gender, in the sense that females tend to score higher than males.

For both groups (female and male), the p-values associated with the Kolmogorov-Smirnov and Shapiro-Wilk tests are below the 0.05 significance level, indicating that the distributions of the mental health scores are not parametric. This finding suggests that the hypothesis of normality is rejected for both groups, meaning that the data does not follow a normal distribution. By applying the Mann-Whitney U test, we can determine whether there are statistically significant differences in mental health scores between the gender groups, supporting or rejecting the hypothesis that women tend to score higher than men.

The results of the Mann-Whitney U-test (**Table 3**), used to compare mental health scores between females and males, indicate significant differences between the two groups. The Mann-Whitney U test value is 16,632.000, the Wilcoxon W value is 30,828.000, and the Z value is −2.56. The asymptotic significance value (2-tailed) is 0.01, below the significance threshold of 0.05. The p-value of 0.01 indicates that the

observed differences in the manifestation of mental health symptoms between females and males are statistically significant. Given that this value is less than 0.05, we can reject the null hypothesis that there are no differences between the groups and accept the alternative hypothesis that there are significant differences in the manifestation of mental health symptoms between the genders.

Table 3. Test statistics.

	Mental health
Mann-Whitney *U*	16,632.000
Wilcoxon *W*	30,828.000
Z	−2.568
Asymp. Sig. (2-tailed)	0.010
a. Grouping Variable: Gender	

The negative value of *Z* (−2.56) suggests that the scores of females are significantly higher than those of males, in the direction of the research hypothesis. This result supports the hypothesis that females tend to have higher mental health scores than males, indicating a higher prevalence or intensity of mental health symptoms in females.

These results suggest that women experience more mental health symptoms than men, which a combination of biological, psychological, and social factors may explain. Gender differences in the manifestation of mental health symptoms may be attributable to women's greater vulnerability to emotional disorders such as depression and anxiety, which are more commonly diagnosed in women than in men.

Biologically, hormonal differences play an important role in women's predisposition to certain mental disorders. Hormonal fluctuations associated with the menstrual cycle, pregnancy, childbirth, and menopause may contribute to increased vulnerability to affective disorders. Women also differ in their stress response, and the hypothalamic-pituitary-adrenal axis, which regulates the stress response, may function differently in women than in men.

At the psychosocial level, women are exposed to specific stressors, including multiple roles (work, caregiving, household responsibilities), which may increase the risk of mental disorders. Women also tend to use more emotion-oriented coping strategies, such as rumination, which is associated with increased vulnerability to depression and anxiety. Cultural and social norms may encourage women to express mental health symptoms more often. In contrast, men may be less likely to recognize and report such symptoms because of gender stereotypes that value emotional power and control.

Hypothesis 4. We expect there to be a positive relationship between aggressive displays towards victims and the prevalence of mental health problems (dysfunctional negative emotions, anxiety).

For all the variables (aggressive displays, dysfunctional negative emotions, anxiety, and mental health), the *p*-values associated with the Kolmogorov-Smirnov and Shapiro-Wilk tests are below the significance threshold of 0.05, indicating that the distributions of the scores for all variables do not follow a parametric distribution.

Thus, the hypothesis of normality is rejected for each of these variables, suggesting that parametric statistical methods may not be appropriate.

The Spearman correlation analysis in **Table 4** indicates a statistically significant relationship between aggressive displays and mental health. The Spearman correlation coefficient between aggressive displays and mental health is 0.23, with a *p*-value of 0.00**,** indicating a significant positive correlation at a significance level of 0.01 (2-tailed).

Table 4. Correlations.

			Aggressive manifestations	**Mental Health**
Spearman's rho	Aggressive manifestations	Correlation Coefficient	1.000	0.238**
		Sig. (2-tailed)	.	0.000
		N	403	401
	Mental Health	Correlation Coefficient	0.238**	1.000
		Sig. (2-tailed)	0.000	.
		N	401	401

** Correlation is significant at the 0.01 level (2-tailed).

This means that as the frequency or intensity of aggressive displays increases, there is a general tendency for mental health scores (which include aspects such as dysfunctional negative emotions and anxiety) also to be higher. The statistical significance indicated by the p-value of 0.00 (below the 0.01 threshold) confirms that this relationship is not due to chance. Still, it reflects a genuine relationship between the two variables studied.

The results suggest that victim aggression is associated with a deterioration in mental health. This positive association indicates that individuals who display aggressive behaviors are more likely to experience mental health problems such as dysfunctional negative emotions and anxiety. Several psychological and social mechanisms can explain this relationship.

First, people who display aggression may experience high levels of psychological distress, guilt, or shame, which contribute to symptoms of anxiety and depression. Aggression may also be a dysfunctional coping mechanism used to manage one's emotional difficulties or external stressors, leading to an amplification of mental health problems. These aggressive displays can also damage interpersonal relationships and create a hostile social environment, which in turn increases vulnerability to negative emotions and anxiety symptoms.

Second, aggressive behaviors may reflect difficulties in emotional regulation, a psychological factor associated with a variety of mental health problems. People with a poor capacity to manage negative emotions may resort to aggression as a way of expressing or venting internal frustrations and tensions, which can lead to a perpetuation of negative mental health symptoms.

The positive correlation identified between aggressive displays and mental health problems suggests a significant interdependence between these variables, highlighting the importance of interventions that address both aggressive behaviors and mental health to prevent and manage the negative impact of these interrelated factors on the individual and those around them.

The Spearman correlation coefficient (**Table 5**) between aggressive displays and dysfunctional negative emotions is 0.19, with a *p*-value of 0.00. This result indicates a weak but statistically significant positive correlation at the 0.01 level (2-tailed). This means that, although the relationship is not very strong, there is a significant positive association between the frequency or intensity of aggressive displays and the level of dysfunctional negative emotions. The *p*-value of 0.00 confirms that the probability that this correlation is the result of chance is extremely low, which validates that there is a real relationship between the two variables studied. Thus, it can be said that individuals who more frequently exhibit aggressive behaviors also tend to have higher levels of dysfunctional negative emotions, such as depression, anxiety, or anger.

Table 5. Correlations.

			Aggressive manifestations	**Dysfunctional negative emotions**
Spearman's rho	Aggressive manifestations	Correlation Coefficient	1.000	0.191**
		Sig. (2-tailed)	.	0.000
		N	403	401
	Dysfunctional negative emotions	Correlation Coefficient	0.191**	1.000
		Sig. (2-tailed)	0.000	.
		N	401	401

** Correlation is significant at the 0.01 level (2-tailed).

This positive correlation between aggressive displays and dysfunctional negative emotions suggests a link between dysfunctional internal emotional experiences and the tendency to display aggressive behaviors towards others. Dysfunctional negative emotions, such as intense frustration, depression, or severe anxiety, may cause a person to have difficulty regulating emotions, thus leading to external expressions of aggression.

Aggression can also be understood to manage or discharge intense and uncontrolled negative emotions. Individuals who frequently experience dysfunctional negative emotions may be more prone to react aggressively in situations perceived as stressful or threatening, using aggression as a maladaptive coping mechanism to cope with internal emotional tension. This can include behaviors such as angry outbursts, threatening behavior, or even verbal or physical violence.

On the other hand, the relationship between aggressive displays and dysfunctional negative emotions may also reflect the fact that people who frequently engage in aggressive behaviors subsequently experience feelings of guilt, shame, or regret, thus contributing to an exacerbation of negative emotional states. This can lead to a vicious cycle in which dysfunctional negative emotions fuel aggressive behaviors, and aggressive displays intensify feelings of psychological discomfort and internal tension.

The results highlight the need for psychological interventions that address both emotional regulation and aggressive behavior management to break the negative feedback loop between dysfunctional emotions and aggressive behaviors.

The Spearman's rho correlation coefficient (**Table 6**) between aggressive displays and anxiety is 0.275, with a *p*-value of 0.000. This coefficient suggests a moderate positive correlation and is statistically significant at the 0.01 level (2-tailed).

The positive value of the correlation coefficient indicates that, as the level of anxiety increases, there is a tendency for an increase in aggressive manifestations. The *p*-value of 0.00 confirms that this relationship is statistically significant, and it is doubtful that this association results from chance.

Table 6. Correlations.

			Aggressive displays	**Anxiety**
Spearman's rho	Aggressive displays	Correlation Coefficient	1.000	0.275**
		Sig. (2-tailed)	.	0.000
		N	403	402
	Anxiety	Correlation Coefficient	0.275**	1.000
		Sig. (2-tailed)	0.000	.
		N	402	402

**. Correlation is significant at the 0.01 level (2-tailed).

The moderate positive correlation between aggressive displays and anxiety suggests a significant link between anxiety experiences and aggressive behavior tendencies. This may indicate that individuals with higher levels of anxiety are more likely to exhibit aggressive behaviors, probably as a form of reaction to the intense psychological stress associated with anxiety. Aggression may be perceived as a defense mechanism or as a way of coping with the psychological distress generated by anxiety.

Anxiety, by its very nature, involves an increased activation of the autonomic nervous system, which can lead to a state of physiological and emotional hyperarousal. In this setting, aggressive behaviors may appear to release accumulated tension to reduce anxiety through physical or verbal expression. In addition, severe anxiety is associated with distorted perceptions of external threats, which may cause individuals to react aggressively in situations they perceive as dangerous, even when there is no real threat.

On the other hand, this correlation may also reflect difficulties with emotional regulation in anxious people. People with high levels of anxiety may have trouble managing negative emotions, making them more likely to react impulsively and aggressively in situations of stress or frustration. Aggression, in this case, can be seen as a dysfunctional response to the inability to cope with anxiety through more adaptive means, such as assertive communication or the use of relaxation techniques.

6. Discussions

The findings of this study provide substantial evidence underscoring the link between aggressive behaviors and adolescent mental health. Our data indicate significant positive correlations between aggressive actions and dysfunctional negative emotions, as well as between aggressive tendencies and heightened anxiety levels. Adolescents involved in bullying, whether as perpetrators or victims, exhibit an increased likelihood of developing psychological issues, aligning with the established literature on the adverse impacts of bullying on mental well-being (Arseneault et al., 2010; Arslan et al., 2021; Coyle et al., 2021; Duan et al., 2020;

Hawker and Boulton, 2000; Rad and Demeter, 2019; Salmivalli et al., 2021). This correlation between aggression and psychological distress has profound implications for interventions aimed at both aggression and mental health.

A vital aspect observed in this study is the moderate correlation between aggression and anxiety ($r = 0.275$, $p < 0.01$), suggesting that adolescents exhibiting high levels of anxiety may be more prone to aggressive behaviors as a mechanism for managing psychological stress (Herd and Kim-Spoon, 2021; Zhang et al., 2022). This behavioral phenomenon can be theoretically grounded in autonomic nervous system activation, which exacerbates emotional responses (Cisler and Koster, 2010). Severe anxiety might distort the adolescent's perception of social threats, increasing the likelihood of reacting aggressively. The literature on supervision and self-efficacy in therapeutic contexts, such as that by Watkins et al. (2022), supports this, noting that poorly managed anxiety can impact behavior in various settings, a concept relevant to understanding youth aggression as a response to internal distress.

Gender differences in negative emotions and anxiety are consistent with existing literature, which has extensively documented the heightened susceptibility of females to affective disorders, including anxiety and depression (Cowie, 2011; Nolen-Hoeksema, 2012). Our study reveals that adolescent girls report higher levels of negative emotions and anxiety than boys, a finding mirrored by other studies that attribute this discrepancy to both biological and psychosocial factors, such as hormonal changes and societal expectations (Marici et al., 2024; Watkins et al., 2020). This gendered vulnerability to emotional dysregulation calls for a nuanced approach to mental health interventions, particularly those aimed at adolescents in socially challenging environments.

The robust correlation between aggression and general mental health ($r = 0.238$, $p < 0.01$) suggests that severe psychological issues, such as mood disorders, are closely linked with aggressive tendencies. This relationship, highlighted in previous research, underscores the need for comprehensive interventions that address both aggression and broader mental health concerns (Demeter and Rad, 2020; Rad et al., 2020). Our findings highlight that those who experience mental health issues, particularly those related to affect regulation, may be more prone to aggression as they struggle with intense emotional responses. Furthermore, the importance of psychosocial support in ameliorating these effects is emphasized by works focusing on social and school climate, which can buffer against negative outcomes for adolescents (Mazilescu et al., 2021; Gavriluță and Bortoș, 2021).

Results indicate a protective role of social support and a positive school environment in mitigating the adverse effects of bullying on mental health. Previous studies have similarly noted that emotional regulation and improved interpersonal relationships within the school context contribute to resilience against aggression and psychological distress (Cowie, 2011; Rad et al., 2020). Interventions focusing on building emotional regulation skills and enhancing social bonds within educational settings could serve as preventative measures against both aggressive behaviors and psychological distress among adolescents. These findings underscore the importance of implementing school-based interventions that focus on strengthening emotional regulation skills, fostering inclusive peer relationships, and cultivating a supportive school climate. Future research should explore these interventions in diverse settings

and employ longitudinal designs to better understand the causal dynamics of the relationships identified in this study.

This study's cross-sectional design poses limitations by preventing the establishment of causal relationships between variables. While we identified significant correlations between aggressive behaviors and mental health, we cannot ascertain the causality direction. This issue is compounded by the absence of longitudinal data, which would allow for an exploration of these relationships' dynamics over time (Rad et al., 2019; Watkins et al., 2021). Additionally, the sample may not be representative of the broader population, potentially limiting the generalizability of our findings. Future research would benefit from longitudinal designs and more diverse samples to develop a comprehensive understanding of these relationships, which could inform more targeted interventions in school and community settings.

This study emphasizes the complex association between aggressiveness and adolescent mental health, specifically noting the significance of contextual factors including gender, social support, and school climate. Addressing youth aggressiveness necessitates a comprehensive approach that encompasses improving emotional regulation, fostering supportive educational environments, and recognizing the complex nature of mental health needs.

7. Conclusion

This study emphasizes the significant influence of bullying on adolescent mental health by exposing a direct correlation between psychological distress and aggressive behaviors. Positive associations between aggression, dysfunctional negative emotions, and anxiety imply that bullying involvement—as either a victim or a perpetrator—may lead to long-term mental health problems including more depression and anxiety. These results confirm earlier studies showing how negatively bullying affects well-being (Arseneault et al., 2010; Hawker and Boulton, 2000; Rad and Demeter, 2019).

Our findings also show notable gender disparities since girls show more sensitivity to the psychological effects of bullying. This sensitivity implies that gender-specific treatments could be essential in meeting the particular requirements of teenage females, who can be more prone to emotional dysregulation in reaction to bullying events. The relationship between overall mental health and aggressiveness also suggests that serious psychological problems, particularly mood disorders, are usually associated with aggressive behaviors. This association stresses the need of interventions aiming not just on aggressive behaviors but also on emotional control and enhancement of interpersonal dynamics in the classroom.

Early intervention initiatives in schools are essential in order to reduce the negative consequences of bullying and advance better teenage development. Such programs might stop the spread of aggressiveness and its psychological effects. Future long-term research is advised to investigate the changing character of these interactions and find elements that support resilience, therefore guiding focused and durable intervention plans for teenage mental health.

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