Research Paper

Mindfulness, Cyberbullying and Cognitive Emotion Regulation in Adolescents

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ABSTRACT

Background: Adolescence is a critical period marked by increased vulnerability to cyberbullying and emotional challenges. The present study aimed to investigate the mediating role of mindfulness in the relationship between cyberbullying and cognitive emotion regulation among adolescents.

Methods: This correlational study included approximately 500 male and female first-grade high school students in Amol City during the 2022-2023 academic years. A sample of 235 students was selected through cluster random sampling. The cyberbullying scale, cognitive emotion regulation questionnaire (CERQ), and five facet mindfulness questionnaire (FFMQ) were used for data collection. Structural equation modeling (SEM) with PLS software, version 4, was utilized for data analysis.

Results: The results indicated that the model of cyberbullying's effect on cognitive emotion regulation, with the mediating role of mindfulness, fits well (standardized root mean square residual=0.079, goodness-of-fit=0.47). Mindfulness played a significant mediating role in the relationship between cyberbullying and cognitive emotion regulation (P<0.01). Cyberbullying significantly decreased positive cognitive emotion regulation strategies (β=-0.604, P<0.001) and increased negative cognitive emotion regulation strategies (β=0.440, P<0.001) by reducing mindfulness (β=-0.530, P<0.001). The mediating role of mindfulness was significant for both positive (β=-0.130, P=0.001) and negative (β=0.11, P=0.004) cognitive emotion regulation strategies.

Conclusion: This study demonstrated the significant mediating role of mindfulness in the relationship between cyberbullying and cognitive emotion regulation among adolescents. These results highlight the importance of mindfulness in the context of adolescents' online experiences and emotional regulation processes, providing a foundation for understanding the complex interplay between cyberbullying, mindfulness, and cognitive emotion regulation.

Keywords: Mindfulness, Cyberbullying, Emotion regulation, Adolescent, Cognition

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Introduction

Today, most children and adolescents use the internet and smartphones for communication, education, and entertainment purposes. The use of digital technology offers numerous benefits, such as simultaneous communication with others, easy and fast access to educational topics, and the ability to establish social connections worldwide [1]. Despite all these advantages, there are significant potential threats associated with online communications [2]. One of these threats is cyberbullying, defined as the extension of bullying from schools to virtual platforms, through the use of electronic or digital media (e.g. sending text messages via mobile phones, and social media) [3]. In other words, this problem is defined as intentional and repetitive harm to another person through the use of electronic devices and online technologies (such as computers, smartphones, the internet, and social media) [4]. Adolescents who experience any form of cyberbullying may exhibit feelings of depression, confusion, guilt, fear, shame, stress, anxiety, and low self-esteem [5]. Mental and behavioral health problems associated with cyberbullying may be more damaging than those related to traditional bullying due to the frequency and anonymity of bullying behaviors facilitated by technology [6, 7].

According to the theory of stress and coping [8], stressful situations require evaluation and decision-making for effective coping. Therefore, how adolescents and children cope with a stressful situation, such as cyberbullying, will have significant effects on their psychological adaptation [9]. Cognitive emotion regulation is now considered a key element in stress management, defined as "external and internal processes responsible for monitoring, evaluating, and modifying emotional reactions, particularly their intensive and temporal characteristics, to accomplish one's goals" [10].

Cognitive emotion regulation encompasses nine strategies that individuals may employ to manage negative or stressful situations [11]. These strategies are classified into adaptive strategies (e.g. acceptance, putting into perspective, planning, positive reappraisal, and positive refocusing) and maladaptive strategies (e.g. rumination, catastrophizing, self-blame, and blaming others). In the context of cyberbullying, cyberbullying can lead to an increase in internalizing symptoms through the use of maladaptive cognitive emotion regulation strategies [12].

Conversely, recent literature highlights the beneficial role of mindfulness in the context of cyberbullying. Mindfulness has been shown to predict lower levels of both victimization and perpetration in cyberbullying [13]. Some research has explored the mediating role of mindfulness between childhood emotional abuse and cyberbullying, confirming its mediating effect in this relationship [14]. Another study demonstrated that mindfulness partially mediates the relationship between cyberbullying victimization and depression and anxiety [15]. A recent experimental study indicates that students with low mindfulness are more susceptible to cyberbullying compared to those with high mindfulness [16]. However, this relationship has not yet been thoroughly investigated among adolescents. Despite these findings, some studies have presented contrasting results. For instance, a study found that trait mindfulness was not significantly associated with cyberbullying perpetration among adolescents [17]. Similarly, Shaheen et al. [18] reported that while mindfulness was negatively related to cyberbullying victimization, it did not significantly mediate the relationship between cyberbullying and psychological distress. Chen et al. [19] suggested that the protective effect of mindfulness against cyberbullying might be moderated by factors, such as social support and self-efficacy, indicating a more complex relationship than previously thought. These inconsistent findings highlight the need for further investigation of the role of mindfulness in the context of cyberbullying, particularly among adolescents. Mindfulness is defined as "awareness that arises through paying attention, on purpose, in the present moment, and non-judgmentally to the unfolding of moment-to-moment experience" [20]. Researchers suggest that mindfulness can be conceptualized as both state-like and trait-like characteristics. Trait mindfulness, or dispositional mindfulness, represents the tendency of individuals to be mindful across time and various everyday situations [21].

Similarly, mindfulness can play a positive role in reducing antisocial online behaviors, such as cyberbullying, in both cross-sectional studies [14] and longitudinal research [22]. Thus, the trait of mindfulness can act as both a protective and mediating factor for cyberbullying. Currently, in Iran, adolescents and students spend a significant amount of time online and have numerous online contacts on social networking sites, yet they possess fewer digital skills (such as blocking messages and changing privacy settings on social media profiles). Consequently, the underdeveloped digital skills and extensive use of social networks among children and adolescents place many Iranian youths at risk of harassment and cyberbullying. This evidence underscores the neces-

sity of conducting research among Iranian children and adolescents to understand this phenomenon and design targeted interventions for prevention.

This investigation has significant practical and policy implications. Understanding this relationship can inform the development of targeted intervention programs that incorporate mindfulness training as a protective factor against the negative effects of cyberbullying. Such programs could be implemented in educational settings, potentially reducing the prevalence and impact of cyberbullying among adolescents. From a policy perspective, the findings of this study could influence the formulation of comprehensive anti-cyberbullying strategies at both school and national levels. These policies might mandate the integration of mindfulness-based practices into school curricula or after-school programs, particularly in regions with high rates of cyberbullying. Furthermore, the results could guide the allocation of resources toward digital literacy education, helping adolescents develop the skills necessary to navigate online spaces safely. By elucidating the role of mindfulness in this context, this study may also contribute to the refinement of existing mental health support systems for adolescents, potentially leading to more effective, targeted interventions that combine traditional counseling approaches with mindfulness techniques. Ultimately, these practical and policy implications underscore the potential for this research to make a tangible difference in addressing the growing concern of cyberbullying among adolescents in Iran and beyond.

Therefore, this study aimed to answer whether mindfulness mediates the relationship between cyberbullying and cognitive emotion regulation in adolescents.

Methods

Study design

This study was correlational and included a statistical population of approximately 500 male and female first-grade high school students (250 males and 250 females) in Amol City during the 2022-2023 academic year.

Sampling

In structural equation modeling (SEM), it is preferable to have a sample size of at least 200 individuals [23]. The sample size is determined based on the number of observed variables in the model, with a typical recommendation of allocating 15 samples per observed variable. Therefore, with 15 observed variables and an allocation ratio of 15, the sample size was calculated to be 225 individuals. Considering a potential 5% attrition rate, the sample size was estimated to be 235 participants (117 males and 118 females), who were selected through cluster random sampling from among first-year high school students.

Two regions, north and east, were randomly selected from the east, west, north, and south areas of Amol City. From these regions, eight schools (four boys' schools and four girls' schools) were randomly chosen. Subsequently, one class from the seventh grade was selected from each school, and all students in the selected classes participated in the study (it should be noted that the number of students in each class ranges from 15 to 25).

Participants were included in the study if they met the following criteria: 1) Enrolled as first-grade high school students in Amol City, 2) Aged between 13 and 16 years, 3) Provided informed consent, and 4) Had access to the internet and social media platforms. Exclusion criteria were: 1) The presence of any diagnosed psychiatric disorders that could interfere with the study's outcomes, 2) Incomplete responses to questionnaires, 3) Unwillingness to participate at any stage of the study, and 4) Absence from school during the data collection period. These criteria ensured a representative sample of typical adolescents while maintaining the integrity of the data collected.

Study measures

Cyberbullying scale

This scale was developed and introduced by Menesini et al. in 2011 and consists of two versions: One for individuals who have faced cyberbullying and another for those who have perpetrated such behavior [24]. The response scale of this questionnaire is as follows: Never=1, once or twice in two months=2, two to three times a month=3, once a week=4, and several times a week=5. All measured loads were >0.70. Its reliability was reported as 0.85 by Cronbach's α coefficient. For example, one item might be, "I received hurtful messages through social media", which measures the experience of receiving negative online communication. The developers reported strong structural validity using confirmatory factor analysis for both versions Goodness-of-fit index (CFI)=0.94, root mean square error of approximation (RMSEA)=0.07) [24]. In Iran, the formal and content validity of the tool was also examined, and its structural validity was confirmed through factor analysis [5]. All measured loads were >0.7. Its reliability was reported

as 0.85 by Cronbach's α coefficient and in the current study, Cronbach's α was 0.87, indicating high internal consistency.

Cognitive emotion regulation questionnaire (CERQ)

It is a short form developed by Garnefski and Kraaij in 2006 for assessing cognitive emotion regulation [25]. The scale comprises 18 items and nine subscales of emotion regulation strategies, with each strategy measured by two items on a five-point scale. Therefore, the subscales include self-blame (e.g. "I feel that I am the one to blame for it"), acceptance (e.g. "I think that I have to accept that this has happened"), rumination (e.g. "I often think about how I feel about what I have experienced"), positive refocusing (e.g. "I think of nicer things than what I have experienced"), refocus on planning (e.g. "I think about how I can best cope with the situation"), positive reappraisal (e.g. "I think I can learn something from the situation"), putting into perspective (e.g. "I think that it has not been too bad compared to other things"), catastrophizing (e.g. "I keep thinking about how terrible it is what I have experienced"), and blaming others (e.g. "I feel that others are to blame for it"). Garnefski and Kraaij [25] reported good construct validity through factor analysis (explained variance=68.2%) and criterion validity (correlations with depression and anxiety measures, r=0.38 to 0.69). In this questionnaire, a higher score indicates greater use of that cognitive strategy. Positive cognitive emotion regulation strategies include acceptance, positive refocusing, positive reappraisal, positive refocusing on planning, and putting into perspective, while negative strategies include self-blame, rumination, catastrophizing, and blaming others. The Persian version demonstrated good convergent and divergent validity (correlations with related constructs, r=0.32 to 0.67) [26]. The α coefficient for the subscales of this questionnaire ranges from 0.71 to 0.81. In our study, Cronbach's α for the subscales ranged from 0.73 to 0.85, showing good internal consistency.

Five facet mindfulness questionnaire (FFMQ)

The FFMQ is a self-assessment scale comprising 39 items, developed by Baer et al. in 2006 [27] through the integration of items from the Freiburg mindfulness inventory (FMI) [28], the mindful attention awareness scale (MAAS) [29], and the Kentucky inventory of mindfulness skills (KIMS) [30]. The scale has undergone a refined factor analysis approach. It consists of five subscales, including observing, describing, acting with awareness, non-judging, and non-reactivity. The "observing" facet includes an item like, "I notice the smells and aromas of things". The "describing" facet has items such as, "I'm good at finding words to describe my feelings". The "acting with awareness" facet includes items like; "I find it difficult to stay focused on what's happening in the present" (reverse scored). The "non-judging of inner experience" facet includes items such as, "I criticize myself for having irrational or inappropriate emotions" (reverse scored), and the "non-reactivity to inner experience" facet includes items like, "I perceive my feelings and emotions without having to react to them". Baer et al. [31] reported good construct validity through confirmatory factor analysis (CFI=0.97, RMSEA=0.07) and criterion validity (correlations with related measures, r=0.41 to 0.6). In Iran, the scale showed good convergent validity (correlations with well-being measures, r=0.48 to 0.63). The answers are rated on a five-point Likert scale ranging from one (never or very rarely) to five (often or always). The score range for this scale is 39 to 195. In Iran, correlation coefficients between 0.57 (for the non-judging factor) and 0.84 (for the observing factor) were observed for the test re-test reliability of the questionnaire. Moreover, acceptable α coefficients were obtained (ranging between 0.55 for the non-reactivity factor and 0.83 for the describing factor) [32]. The reported reliability of the questionnaire was 0.78, as determined by Cronbach's α coefficient [32]. In our study, Cronbach's α for the total scale was 0.86, with subscale α ranging from 0.77 to 0.89, indicating good to excellent internal consistency.

Data analysis

The data analysis strategy employed a multi-faceted approach to address the study objectives and test the hypothesized mediating role of mindfulness in the relationship between cyberbullying and cognitive emotion regulation among adolescents. Initial analyses included descriptive statistics (Mean±SD, skewness, and kurtosis) and the Kolmogorov-Smirnov test to assess data distribution normality. Bivariate relationships were examined using Pearson correlation coefficients. The core analysis utilized SEM with partial least squares (PLS) to test the mediation model, encompassing both measurement model assessment (construct reliability and validity) and structural model evaluation (direct and indirect effects). Prior to analysis, the data were screened to ensure they met the necessary preconditions for mediation analysis, including linearity, absence of multicollinearity, adequate sample size, normality of residuals, absence of outliers, and reliability of measures. SPSS software, version 26 was employed for preliminary analyses and descriptive statistics, while PLS software, version 4, was used for

SEM and mediation analysis, with model fit assessed through indices, including goodness-of-fit (GOF), standardized root mean square residual (SRMR), R^2, and Q^2.

Results

The frequency and relative frequency of participants' gender in the study showed that 50.5% of participants were female and 49.5% were male. The mean age was 13.92 years, with a standard deviation of 0.79. SEM was used to fit a model of the relationship between cyberbullying and cognitive emotion regulation in adolescents with the mediating role of mindfulness based on theoretical data.

Prior to conducting the main analysis, we examined the model assumptions. The normality of the data was assessed using the Kolmogorov-Smirnov test, which showed that the variables were approximately normally distributed (P>0.05 for all variables). Multicollinearity was evaluated using variance inflation factors (VIFs), with all values ranging from 1.15 to 2.43, well below the problematic threshold of five. Linearity was confirmed through visual inspection of scatterplots between predictor and outcome variables, showing no significant deviations from linearity. Homoscedasticity was assessed visually using residual plots, which displayed no systematic patterns. The absence of influential outliers was confirmed using standardized residuals (all within ±3.29) and Cook's distance (maximum value of 0.042, well below the cutoff of one). Additionally, the sample size of 235 participants met the minimum requirement for SEM analysis, being greater than 200 as suggested by Kline [23]. These results suggest that the assumptions for the SEM were adequately met, supporting the validity of our subsequent analyses.

In the PLS software, the quality of the structural model is assessed using the GOF index, with the most well-known and recognized measure of this ability being the Stone-Geisser Q^2 value. Values of Q^2 above zero indicate that the observed values have been well reconstructed, and the model has good predictive ability, meaning the model is of good quality. Table 1 presents the Stone-Geisser Q^2 values, all of which are positive. Therefore, the structural model exhibited good quality. The predictive power of the model for latent endogenous variables was strong. The R^2 value for cognitive emotion regulation was positive at 0.54 and negative at 0.34 for negative cognitive emotion regulation, indicating a strong fit of the model for cognitive regulation. Thus, this model explained 54% of positive cognitive emotion regulation and 34% of negative cognitive emotion regulation. Finally, Table 1 shows that the SRMR value was approximately 0.080, close to the criterion of 0.079, and the GOF index for the final model was 0.47, which is >0.36, indicating a good fit of the model. In other words, the model demonstrated a desirable fit (Figures 1 and 2).

Direct coefficients between variables are shown in Table 2.

The results of the path analysis using PLS software, indicated that cyberbullying had a significant negative impact on adolescents' cognitive regulation of positive emotions (P=0.000, t=12.14, β=-0.604), while it had a significant positive effect on adolescents' cognitive regulation of negative emotions (P=0.000, t=5.8, β=0.440). Furthermore, cyberbullying significantly decreased adolescents' mindfulness (P=0.000, t=10.005, β=-0.530). As cyberbullying increases adolescent mindfulness significantly decreases. Mindfulness exhibited a significant positive effect on adolescents' cognitive regulation of positive emotions (P=0.001, t=3.34, β=0.210) and a significant negative effect on their cognitive regulation of negative emotions (P=0.002, t=3.10, β=-0.210). Additionally, the results indicated that mindfulness plays a significant mediating role in the relationship between cyberbullying and positive cognitive emotion regulation (P=0.001, t=3.19, β=-0.130). Cyberbullying reduced the level of positive cognitive emotion regulation strategies through the reduction of mindfulness. The path analysis results demonstrated that mindfulness significantly mediated the relationship between cyberbullying and negative cognitive emotion regulation (β=0.11, SE=0.040, $t_{(234)}$=2.84, P=0.004, 95% CI, 0.032%, 0.188%). In other words, cyberbullying increases the level of negative cognitive emotion regulation strategies through the reduction of mindfulness. These findings confirmed that mindfulness mediated the relationship between cyberbullying and cognitive emotion regulation among adolescents.

Discussion

The primary objective of this study was to investigate the mediating role of mindfulness in the relationship between cyberbullying and cognitive emotion regulation among adolescents. The findings confirmed that mindfulness significantly mediated the relationship between cyberbullying and cognitive emotion regulation. Specifically, the results indicated that cyberbullying was associated with a decrease in positive cognitive emotion regulation strategies and an increase in negative cognitive emotion regulation strategies, both of which are mediated by reduced levels of mindfulness. This supports that

Table 1. Model fit indices

Variables		Q^2	R^2	SRMR	GOF
Positive cognitive emotion regulation		0.274	0.54	0.079	0.47
Negative cognitive emotion regulation		0.194	0.34		
Mindfulness		0.193	0.28		
Cyberbullying	Acceptable level	Positive		<0.8	>36.0

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mindfulness acts as a crucial mediator in the interplay between cyberbullying and cognitive emotion regulation in adolescents. In the context of current theories and research, these findings align with several studies underscoring the role of mindfulness in emotional regulation and psychological well-being. Mindfulness, defined as an awareness of present-moment experiences with an accepting attitude, is consistently associated with enhanced emotional regulation abilities. For instance, Kabat-Zinn [20] posited that mindfulness facilitates the adaptive management of emotional responses to stress, which is critical during adolescence—a period characterized by heightened emotional reactivity and vulnerability to peer influences such as cyberbullying.

The significant negative impact of cyberbullying on mindfulness observed in this study is consistent with previous research [13], which found that lower levels of mindfulness are predictive of both cyberbullying victimization and perpetration. It is reported that mindfulness mediates the relationship between childhood emotional abuse and cyberbullying, supporting the notion that mindfulness can buffer the detrimental effects of negative experiences on emotional regulation [14]. Another research [15] showed that mindfulness partially mediates the relationship between cyberbullying victimization and depression and anxiety, which is consistent with the findings of the present study. Moreover, mindfulness is associated with better social relationships [33], social behavior [34], ethical intentions, and fewer transgressions [35]. Similarly, mindfulness can play a positive role in reducing online antisocial behaviors, such as cyberbullying, in cross-sectional studies [14] and longitudinal research [36].

Mindfulness is defined as "being aware of the present moment experience in a clear and balanced manner, whereby one does not ignore or judge their own undesirable aspects or life situations" [37] and it is a significant predictor of well-being and life satisfaction [38, 39]. A recent empirical study indicates that individuals with lower levels of mindfulness are more prone to cyberbullying than those who perceive themselves as highly mindful [36]. Mindfulness is positively associated with higher self-esteem and unconditional self-acceptance [40], which may deter individuals from exhibiting aggressive behaviors as low self-esteem is a significant risk factor in experiencing elevated levels of externalizing

Table 2. Coefficients and values of the structural model for the direct path

Paths	β	SE	t	P
Cyberbullying → positive emotion cognitive regulation	-0.604	0.05	12.14	0.000
Cyberbullying → negative emotion cognitive regulation	0.44	0.076	5.8	0.000
Cyberbullying → mindfulness	-0.53	0.053	10.005	0.000
Mindfulness → positive emotion cognitive regulation	0.21	0.064	3.34	0.001
Mindfulness → negative emotion cognitive regulation	-0.21	0.069	3.1	0.002
Cyberbullying → mindfulness → cognitive emotion regulation (negative)	0.11	0.04	2.84	0.004
Cyberbullying → mindfulness → cognitive emotion regulation (positive)	-0.13	0.036	3.19	0.001

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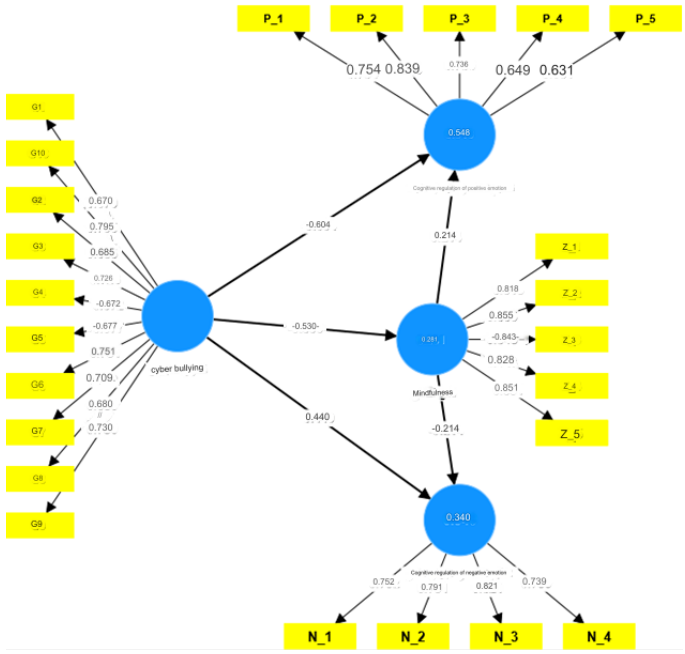

Figure 1. Standard coefficients of paths

problems such as aggression [41]. The positive relationship between aggression and cyberbullying perpetration has also been well established [42]. High mindfulness is also a protective factor against having self-deprecating thoughts that may lead to increased anger and hostility [43]; hence, individuals prone to anger and hostility are more susceptible to engaging in cyberbullying [44]. Given that exposure to cyberbullying is associated with cognitive emotion regulation, mindfulness can lead individuals toward emotional awareness and self-acceptance [16]. Therefore, it can be argued that mindfulness should serve as the mediator between cyberbullying and cognitive emotion regulation in adolescents. Individuals with high levels of mindfulness are likely to observe,

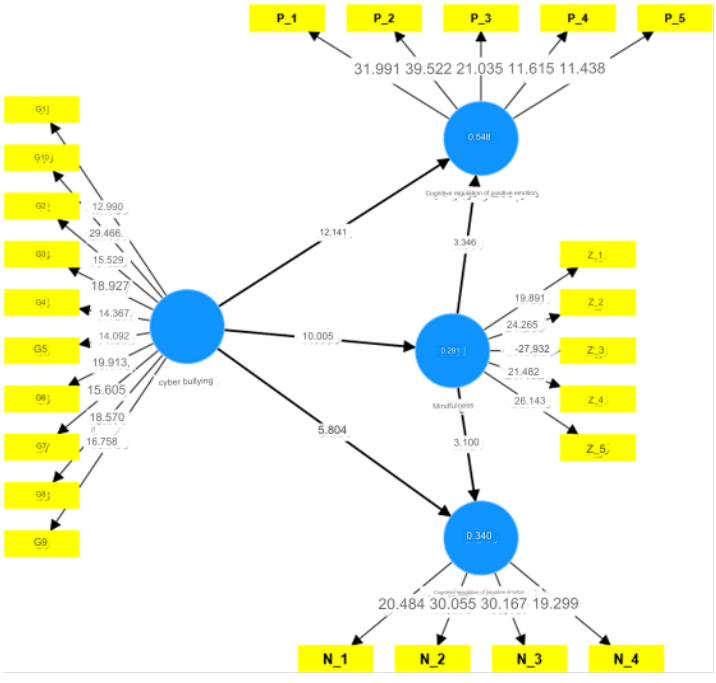

Figure 2. T-values of paths

understand, and accept negative emotions arising from distressing experiences rather than avoiding or rejecting them [18].

The burgeoning interest in examining the role of mindfulness in the cognitive emotion regulation process stems from its impact on reducing negative responses to stress and enhancing emotional management processes [45]. Higher levels of mindfulness are associated with more adaptive emotion regulation processes in both clinical and non-clinical populations [20]. Mindfulness and cognitive emotion regulation are intricately linked, wherein mindfulness facilitates the adoption of more adaptive emotional regulation strategies, such as cognitive reappraisal, while reducing the use of maladaptive strategies, like cognitive rumination and suppression.

New insights from this study emphasize the dual role of mindfulness in both diminishing the adverse effects of cyberbullying on positive cognitive emotion regulation and exacerbating the influence of cyberbullying on negative cognitive emotion regulation. This duality underscores the complex role of mindfulness, where its reduction can lead to both decreased positive outcomes and increased negative outcomes in emotion regulation. These findings are particularly novel in the context of adolescent development, where the capacity for emotion regulation is still maturing. The interpretation of these results suggests that enhancing mindfulness in adolescents could be a valuable approach to mitigating the negative impacts of cyberbullying. Mindfulness training may provide adolescents with the tools to observe, understand, and accept their emotional experiences without resorting to maladaptive regulation strategies such as rumination or suppression. This aligns with the theoretical framework proposed by Baer et al. [27], which suggests that mindfulness contributes to more adaptive forms of emotion regulation, such as cognitive reappraisal, and decreases reliance on maladaptive strategies.

Future research directions should be closely aligned with the findings of this study. Longitudinal designs are crucial to establish causal relationships between cyberbullying, mindfulness, and cognitive emotion regulation, particularly focusing on how changes in mindfulness over time may influence the impact of cyberbullying on emotion regulation strategies. Given our finding that mindfulness mediates both positive and negative cognitive emotion regulation strategies, future studies should investigate how specific mindfulness practices might differentially affect these strategies in the context of cyberbullying. Given the complex interplay revealed in our study, it would be valuable to investigate other potential mediators or moderators. For instance, self-regulation capacities, which are closely linked to mindfulness, could be explored as a parallel mediator. Cognitive distortions, particularly those related to online interactions, and attachment styles might moderate the relationship between cyberbullying and mindfulness. These factors could help explain individual differences in the effectiveness of mindfulness as a protective factor against cyberbullying's negative effects. These findings on the differential impacts of mindfulness on positive and negative emotion regulation strategies suggest the need for more nuanced measurement tools. Future research should develop and validate instruments that can capture the subtle ways, in which mindfulness influences various emotion regulation strategies in the specific context of cyberbullying. Translational research is needed to bridge the gap between these findings and real-world applications. This could involve developing and testing school-based mindfulness programs that are specifically designed to address cyberbullying, or creating digital interventions that promote mindfulness during online interactions. Such research could inform evidence-based policies and practices aimed at fostering digital well-being among adolescents, ultimately contributing to their psychological resilience in the face of online challenges.

Conclusion

This study provides compelling evidence for the mediating role of mindfulness in the relationship between cyberbullying and cognitive emotion regulation among adolescents. The findings underscore the complex interplay between these variables, revealing that cyberbullying significantly impacts both positive and negative cognitive emotion regulation strategies through its influence on mindfulness. Specifically, increased exposure to cyberbullying is associated with decreased mindfulness, which in turn leads to reduced use of positive emotion regulation strategies and increased reliance on negative strategies. The results highlight the dual nature of mindfulness as a protective factor; it not only enhances positive cognitive emotion regulation but also mitigates negative regulation strategies in the face of cyberbullying. This duality emphasizes the critical role of mindfulness in adolescents' emotional well-being, particularly in the context of online interactions and experiences. By elucidating the role of mindfulness in the cyberbullying-emotion regulation relationship, this study contributes to our understanding of adolescent digital well-being and emotional competence in the face of online challenges.

Ethical Considerations

Compliance with ethical guidelines

This research was approved through a review and approval process at Islamic Azad University, Ayatollah Amoli Branch, Amol, Iran (Code: IR.IAU.AMOL.REC.1403.025).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interestd.

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