

Mindfulness And Parenting Style As Predictors Of Bullying Tendency Among Primary School Students In Zhengzhou: The Mediating Role Of Self-Esteem And Peer Interaction

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ABSTRACT

Background: Although school bullying is a pervasive global issue, limited research has systematically examined its underlying psychological and social mechanisms within integrated frameworks, particularly among primary school students in rapidly urbanizing Chinese cities.

Objective: This study aims to explore how mindfulness and parenting style influence bullying tendencies, with a specific focus on the mediating roles of self-esteem and peer relationship.

Methods: A cross-sectional survey was conducted among 576 primary school students in Zhengzhou City, China. Participants completed validated questionnaires measuring mindfulness, parenting style, self-esteem, peer relationship, and bullying tendencies. Structural equation modeling (SEM) was employed to analyze the hypothesized direct and mediating relationships among variables.

Results: All direct hypotheses were supported. Mindfulness ($\beta = -0.197$, $p < 0.001$) and parenting style ($\beta = -0.177$, $p = 0.006$) significantly reduced bullying tendencies. Both mindfulness and parenting style positively influenced self-esteem and peer relationship. Furthermore, self-esteem ($\beta = -0.358$, $p < 0.001$) and peer relationship ($\beta = -0.344$, $p < 0.001$) negatively predicted bullying tendencies. Mediation analysis revealed that both self-esteem and peer relationship partially mediated the effects of mindfulness and parenting style on bullying.

Conclusion: This study provides empirical support for a comprehensive model of bullying that integrates both intrapersonal (mindfulness, self-esteem) and interpersonal (parenting style, peer relationship) factors. The findings underscore the importance of cultivating mindfulness and improving parenting practices to reduce bullying behavior through enhanced self-worth and social connectedness among children.

Keywords: Bullying, Mindfulness, Parenting Style, Self-Esteem, Peer Relationship, Primary School Students, Structural Equation Modeling.

INTRODUCTION

School bullying is a pervasive issue characterized by repeated aggressive behavior involving a power imbalance, leading to physical, psychological, and social harm to victims. It manifests in various forms, including physical, verbal, and cyberbullying, and is prevalent in educational settings worldwide. In China, the Ministry of Education, along with other departments, has issued programs to strengthen the comprehensive management of bullying among primary and secondary school students, highlighting the seriousness of the issue (Ministry of Education, People's Republic of China, 2021).

Despite these efforts, bullying remains a significant concern. A study conducted by the Educational Governance Modernization Research Team of Central China Normal University found that the incidence rate of school bullying was 32.4% across six provinces, indicating a high prevalence despite a downward trend in recent years (Fu et al., 2021). Moreover, a report focusing on primary school students in Zhengzhou revealed that the overall

incidence of bullying among grades three to six was 41.3%, with boys experiencing higher rates than girls (Zhang et al., 2021).

Bullying is not only a social issue but also a psychological one, with significant implications for the mental health of both victims and perpetrators. Research indicates that experiences of childhood maltreatment, such as emotional and sexual abuse, are significantly associated with increased risk of school bullying involvement (Liu et al., 2023).

Furthermore, depression has been identified as a mediator between childhood abuse and involvement in school bullying, particularly among female students (Liu et al., 2023).

THE ROLE OF MINDFULNESS IN BULLYING PREVENTION

Mindfulness, defined as the ability to maintain awareness of the present moment with an attitude of acceptance and non-judgment, has been increasingly recognized as a protective factor against bullying behaviors. Studies suggest that higher levels of mindfulness are associated with lower aggression and improved emotional regulation, which can reduce both bullying perpetration and victimization (Kabat-Zinn, 2003). Mindfulness-based interventions have been shown to enhance self-awareness, empathy, and stress management, all of which contribute to healthier peer interactions and decreased bullying tendencies (Zhou et al., 2022).

Furthermore, mindfulness fosters resilience and self-esteem, helping students develop a stronger sense of self-worth and emotional stability. Research indicates that students with higher mindfulness levels exhibit lower levels of anxiety and depression, which are often linked to bullying involvement (Brown & Ryan, 2003). By promoting emotional regulation and reducing impulsivity, mindfulness can serve as a preventative strategy against bullying behaviors in school settings (Tang et al., 2021).

PARENTING STYLE AND ITS INFLUENCE ON BULLYING BEHAVIOR

Parenting style plays a crucial role in shaping children's social behaviors, including their involvement in bullying. A meta-analysis of 107 studies found that positive parenting is negatively correlated with bullying perpetration and victimization, while negative or harsh parenting is positively correlated with bullying behaviors. Specifically, authoritative parenting, characterized by warmth and firm guidance, has been linked to lower bullying tendencies, whereas authoritarian and neglectful parenting styles increase the likelihood of bullying involvement (Ioannidou & Zafiropoulou, 2021).

Additionally, parenting styles influence self-esteem and peer interactions, which are key mediators in bullying behaviors. Research suggests that children raised in supportive and emotionally warm environments develop higher self-esteem, which reduces their likelihood of engaging in bullying (Peng et al., 2021). Conversely, children exposed to controlling or neglectful parenting may struggle with self-worth and social competence, increasing their vulnerability to bullying victimization (Wu et al., 2022).

Given the high prevalence of bullying among primary school students in Zhengzhou, understanding the mediating roles of self-esteem and peer interaction in the relationship between mindfulness, parenting style, and bullying tendency is essential for developing effective intervention strategies. By fostering mindfulness practices and promoting positive parenting, educators and policymakers can mitigate bullying behaviors and enhance students' psychological well-being.

PROBLEM STATEMENT

Although school bullying has garnered considerable academic attention in recent years and has been explored from multiple dimensions—including demographic variables, emotional and social competencies, and school climate (Martínez et al., 2020; Segovia-González et al., 2023)—the comprehensive examination of its underlying psychological and environmental mechanisms remains relatively underdeveloped. In particular, there is limited research investigating how mindfulness and parenting styles contribute to bullying tendencies, and how these effects may be mediated by self-esteem and peer relationships.

Mindfulness, as a psychological trait characterized by present-focused awareness and emotional regulation, has the potential to reduce impulsive and aggressive behaviors, including bullying, by enhancing self-awareness and empathy (Samara et al., 2021). However, little empirical evidence exists regarding the role of mindfulness in influencing bullying behaviors among primary school children. Parenting style, a critical component of the child's social environment, also significantly shapes self-regulatory and interpersonal behaviors. Research suggests that

authoritative parenting fosters higher self-esteem and prosocial behaviors, while authoritarian or neglectful parenting may increase the risk of aggressive tendencies (Zhang, 2021; Wu, 2021).

Furthermore, self-esteem and peer relationships are widely recognized as key predictors of bullying involvement. Shemesh and Heiman (2021) found that children involved in bullying—whether as perpetrators, victims, or bully-victims—exhibited significantly lower levels of global self-esteem than their uninvolved peers. Zhong (2021) demonstrated that better peer relationships are associated with higher academic performance and reduced involvement in bullying. Peer relationships, in particular, play a dual role: as both protective and risk factors depending on their quality. Supportive peer interactions may buffer stress and reduce bullying behaviors, whereas exclusion, rejection, or conflict within peer groups can exacerbate aggression and lead to retaliatory bullying (Li & Liu, 2022; Tang et al., 2023).

Recent data from primary schools in Zhengzhou, China, highlight the urgency of this issue. Reports indicate a growing prevalence of verbal, relational, and cyberbullying among urban and rural students alike, often exacerbated by lack of emotional support and poor peer bonding (Zhengzhou Municipal Education Bureau, 2023). Local studies have found that children with poor peer relationships and low parental involvement are significantly more likely to engage in bullying behaviors or become victims (Chen & Fan, 2023). These findings underscore the urgent need for multidimensional models that consider both psychological traits and social contexts in understanding bullying.

Despite the importance of these factors, current research tends to treat them in isolation, with few studies integrating them into a unified theoretical framework. Specifically, little is known about how mindfulness and parenting style jointly influence bullying tendencies through the mediating effects of self-esteem and peer relationships. Addressing this gap is crucial for understanding the psychosocial mechanisms that drive bullying and for designing more effective intervention strategies.

Therefore, this study aims to construct an integrated model to examine how mindfulness and parenting style affect bullying tendencies among primary school students, while also exploring the mediating roles of self-esteem and peer relationship. The findings will provide both theoretical and practical insights into early detection and prevention of school bullying, particularly in rapidly urbanizing contexts like Zhengzhou.

OBJECTIVES

This study aims to explore how mindfulness, parenting style influence bullying tendencies and to examine the mediating role of self-esteem and peer relationship in this relationship.

SPECIFIC OBJECTIVES

To investigate the impact of mindfulness, parenting style on bullying tendencies.

To examine the influence of mindfulness, parenting style on self-esteem and peer relationship. To confirm the influence of self-esteem and peer relationship on bullying tendencies.

To analyze the mediating role of self-esteem and peer relationship in the relationship between mindfulness, parenting style and bullying tendencies.

CONCEPTUAL FRAMEWORK AND HYPOTHESIS

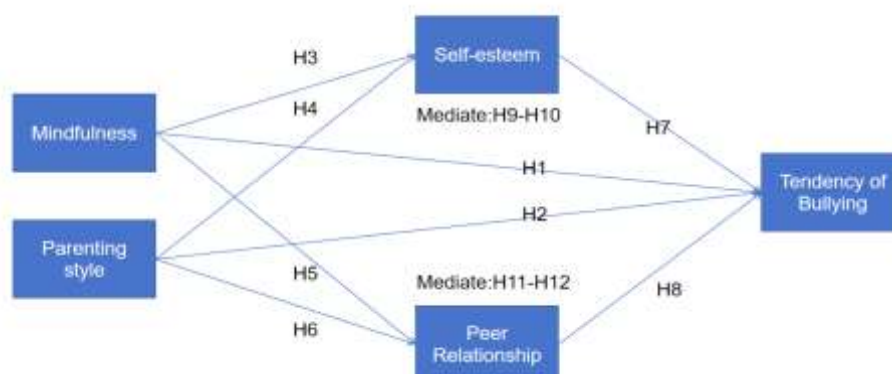


Figure1: Conceptual Framework (Source from author)

HYPOTHESIS

Direct Effects

H1: Mindfulness is negatively associated with bullying tendencies. H2: Parenting style negatively influences bullying tendencies.

H3: Mindfulness is positively associated with self-esteem. H4: Parenting style significantly influences self-esteem.

H5: Mindfulness is positively associated peer relationship.

H6: Parenting style is positively associated with peer relationship. H7: Self-esteem is negatively associated with bullying tendencies.

H8: Peer relationship is negatively associated with bullying tendencies. Mediating Effects

H9: Self-esteem mediates the relationship between mindfulness and bullying tendencies. H10: Self-esteem mediates the relationship between Parenting style and bullying tendencies. H11: Peer relationship mediates the relationship between mindfulness and bullying tendencies. H12: Peer relationship mediates the relationship between parenting style and bullying tendencies.

THEORETICAL SUPPORT

GROUP SOCIALIZATION THEORY

Group Socialization Theory, introduced by Judith Rich Harris, posits that peer groups play a pivotal role in shaping children's social behaviors, often surpassing parental influence as children mature (Harris, 1995). This theory suggests that children adapt their behaviors to align with peer group norms to gain acceptance, leading to the internalization of group-specific behaviors and attitudes. In the context of bullying, this implies that if aggressive behaviors are prevalent within a peer group, individual members may adopt similar behaviors to conform and maintain their social standing (Hymel & Swearer, 2015; Salmivalli & Peets, 2018). Studies have shown that peer group norms significantly influence individual behaviors, including aggression and bullying, highlighting the importance of the social environment in behavioral development (Dishion & Tipsord, 2011).

SOCIAL COGNITIVE THEORY

Albert Bandura's Social Cognitive Theory emphasizes the role of observational learning, imitation, and modeling in behavior acquisition (Bandura, 1977). According to this theory, individuals, especially children, learn and replicate behaviors observed in others, particularly when such behaviors appear to yield positive outcomes (Bandura, 1986, 1989). Bandura's seminal "Bobo doll" experiments demonstrated that children exposed to aggressive models were more likely to exhibit aggressive behaviors themselves (Bandura et al., 1961, 1963). This underscores the impact of environmental factors and observed behaviors in the development of aggression and bullying tendencies (Bandura, 2001, 2018).

APPLICATION TO THE CURRENT STUDY

Integrating these theories provides a comprehensive framework for analyzing bullying behaviors among primary school students. Group Socialization Theory offers insights into how peer group dynamics and norms can foster or inhibit bullying behaviors (Harris, 1995; Salmivalli & Peets, 2018). Simultaneously, Social Cognitive Theory elucidates the mechanisms through which children learn and perpetuate bullying behaviors via observation and imitation (Bandura, 1977; Bandura et al., 1961). By examining the interplay between peer group influences and observational learning, this study aims to identify key factors contributing to bullying tendencies, thereby informing the development of targeted interventions to mitigate such behaviors in primary school settings.

METHODS

This study employs a quantitative survey method, randomly selecting one primary school from each of the five administrative regions in Zhengzhou City to collect data and explore the factors influencing bullying tendencies among primary school students. A total of 10,929 students were surveyed, with 576 valid responses collected for data analysis. All surveys were conducted anonymously to ensure data integrity and participant privacy.

The questionnaire utilizes a Likert 5-point scale, measuring variables including mindfulness, parenting style, lower perceived academic performance, bullied experience, self-esteem, and tendency of bullying. The scale ranges from 1 (strongly disagree) to 5 (strongly agree), reflecting participants' levels of agreement with various statements. All data were analyzed using IBM SPSS Statistics and AMOS structural equation modeling software, employing descriptive statistics, correlation analysis, regression analysis, and structural equation modeling (SEM) to test research hypotheses and examine relationships among variables.

DATA ANALYSIS

TESTING OF NORMALITY

N		Mean	S.D	Skewness	Kurtosis
M1	576	2.88	1.274	.241	-1.077
M2	576	2.54	1.539	.386	-1.430
M3	576	3.11	1.504	-.125	-1.374
M4	576	3.13	1.350	-.057	-1.212
M5	576	3.17	1.476	-.077	-1.416
M6	576	3.33	1.399	-.318	-1.129
PS1	576	2.41	1.122	.129	-1.352
PS2	576	2.34	1.070	.211	-1.205
PS3	576	2.38	1.076	.102	-1.261
PS4	576	2.35	1.033	.110	-1.161
PS5	576	2.28	1.071	.232	-1.215
SE1	576	3.30	1.157	-.036	-.991
SE2	576	3.33	1.205	-.139	-1.036
SE3	576	3.34	1.247	-.093	-1.214
SE4	576	3.36	1.229	-.066	-1.292
SE5	576	3.36	1.264	-.106	-1.262
PR1	576	2.35	1.021	.364	-.978
PR2	576	1.85	1.017	1.048	-.054
PR3	576	2.66	.917	.042	-.936
PR4	576	2.61	.968	-.068	-.981
PR5	576	2.95	1.019	-.428	-1.098
PR6	576	2.73	.940	.089	-1.164
PR7	576	2.18	.981	.397	-.864
TB1	576	1.94	1.299	1.101	-.069
TB2	576	1.82	1.210	1.231	.287
TB3	576	2.40	1.639	.628	-1.281
TB4	576	1.71	1.082	1.289	.697
TB5	576	1.83	1.303	1.121	-.329
TB6	576	1.92	1.430	1.273	.028

To examine the normality of the data for each scale, this study analyzed the skewness and kurtosis indices (see Table 1). According to Kline (2015), skewness values within ± 3 and kurtosis values within ± 10 are generally acceptable in behavioral science research.

The skewness values for the mindfulness items ranged from -0.318 to 0.386, and the kurtosis values ranged from -1.430 to -1.077, indicating a relatively symmetrical distribution with moderate kurtosis, thus meeting the assumptions of normal distribution. For the parenting style items, skewness values ranged from 0.102 to 0.232,

and kurtosis values ranged from -1.352 to -1.161, reflecting a slightly platykurtic distribution that still falls within the acceptable range. The self-esteem items showed skewness values between -0.139 and -0.036, with kurtosis values between -1.292 and -0.991, indicating a relatively symmetrical and flat distribution that approximates normality.

Among the peer relationship items, some items (e.g., PR2, skewness = 1.048) displayed notable positive skewness, suggesting that most respondents provided lower scores; in contrast, PR5 showed slight negative skewness. Overall, kurtosis values ranged from -1.164 to -0.054, suggesting a somewhat flat distribution that does not severely deviate from normality. Items measuring the tendency of bullying exhibited clear positive skewness (ranging from 1.101 to 1.289) and slight positive kurtosis (up to 0.697), indicating that respondents reported lower levels of bullying behavior, potentially influenced by social desirability bias. Nevertheless, both skewness and kurtosis values remained within statistically acceptable limits.

In summary, the skewness and kurtosis values for all measurement dimensions fall within acceptable ranges, supporting the use of parametric statistical methods (structural equation modeling) in subsequent analyses.

The Kaiser Meyer Olkin (KMO) and Bartlett's Test

Table 2: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.954
Bartlett's Test of Sphericity	Approx. Chi-Square	11103.403
	df	406
	Sig.	.000

To evaluate the suitability of the data for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were conducted. The KMO value was 0.954, which exceeds the commonly accepted threshold of 0.90, indicating excellent sampling adequacy (Kaiser, 1974). This suggests that the partial correlations among variables are small, and the dataset is highly appropriate for factor analysis.

Bartlett's test of sphericity yielded a statistically significant result ($\chi^2 = 11103.403$, $df = 406$, $p < 0.001$), rejecting the null hypothesis that the correlation matrix is an identity matrix. This indicates that there are sufficient correlations among the items to proceed with exploratory or confirmatory factor analysis.

These results demonstrate that the dataset is highly suitable for subsequent factor extraction and structural modeling.

ANALYSIS OF TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Total Variance Explained			Rotation Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.204	38.634	38.634	11.204	38.634	38.634	4.817	16.612	16.612
2	3.303	11.360	50.023	3.303	11.360	50.023	4.347	14.990	31.602
3	2.234	7.705	57.728	2.234	7.705	57.728	4.168	14.365	45.967
4	1.918	6.606	64.335	1.918	6.606	64.335	3.823	13.145	59.112
5	1.587	5.507	69.841	1.587	5.507	69.841	3.402	11.729	69.841
6	.884	3.018	73.857						
7	.828	2.828	76.682						
8	.602	2.130	78.814						
9	.487	1.688	80.504						
10	.472	1.627	82.130						
11	.448	1.557	83.688						
12	.432	1.481	85.169						
13	.423	1.466	86.635						
14	.410	1.413	88.048						
15	.381	1.318	89.366						
16	.374	1.298	90.664						
17	.357	1.252	91.916						
18	.343	1.183	93.100						
19	.336	1.167	94.267						
20	.330	1.146	95.413						
21	.321	1.107	96.520						
22	.309	1.073	97.593						
23	.297	1.026	98.619						
24	.275	.947	99.566						
25	.262	.904	100.470						
26	.243	.839	101.309						
27	.234	.807	102.116						
28	.223	.787	102.903						
29	.191	.660	103.563						

Figure 2: Total Variance Explained

To examine the latent structure of the measurement items, Principal Component Analysis (PCA) was conducted using the criterion of eigenvalues greater than 1. The analysis revealed 5 components with eigenvalues exceeding 1, collectively accounting for 69.842% of the total variance before rotation. Specifically, the first component explained 38.634% of the variance, while the remaining five components contributed 11.390%, 7.705%, 6.806% and 5.507% respectively. These results indicate that the observed variables can be effectively reduced into a smaller number of latent dimensions, each capturing substantial variance in the data.

To improve interpretability, the extracted factors were subjected to varimax rotation. The rotated solution redistributed the explained variance more evenly across components. After rotation, the 5 factors accounted for 16.612%, 14.990%, 14.365%, 12.145%, 11.729% of the total variance, respectively, with a cumulative variance of 69.841%. This level of explained variance exceeds the commonly accepted threshold of 60% for construct validity in social science research, suggesting that the factor solution is robust and meaningful for theoretical interpretation.

The results demonstrate that the measurement structure exhibits strong construct validity and internal consistency, supporting the multidimensionality of the scale. Each factor extracted via PCA corresponds to a distinct latent construct, and the high level of explained variance indicates minimal redundancy among items. This provides a solid foundation for subsequent analyses such as confirmatory factor analysis (CFA) and structural equation modeling (SEM), ensuring that the scale captures the intended theoretical dimensions effectively.

ANALYSIS OF ROTATED COMPONENT MATRIX

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
M1	.001	-.190	.809	.027	.153
M2	.196	-.056	.756	.205	.053
M3	.085	-.174	.720	.187	.133
M4	.067	-.147	.801	.146	.149
M5	.063	-.134	.830	.154	.080
M6	.092	-.282	.744	.221	.076
PS1	.115	-.168	.160	.170	.728
PS2	.196	-.150	.125	.193	.700
PS3	.171	-.148	.111	.100	.791
PS4	.111	-.180	.086	.188	.765
PS5	.150	-.139	.113	.197	.742
SE1	.107	-.198	.210	.758	.212
SE2	.079	-.196	.178	.753	.157
SE3	.155	-.229	.193	.752	.230
SE4	.151	-.219	.203	.750	.180
SE5	.177	-.220	.169	.737	.178
PR1	.802	-.082	.064	.197	.094
PR2	.778	-.058	.011	.189	.246
PR3	.784	-.159	.112	.115	.034
PR4	.791	-.208	.118	.063	.162
PR5	.704	-.293	.088	-.001	.007
PR6	.823	-.127	.024	.145	.184
PR7	.785	-.243	.134	.017	.199
TB1	-.196	.725	-.249	-.192	-.179
TB2	-.232	.806	-.174	-.211	-.161
TB3	-.221	.700	-.193	-.258	-.209
TB4	-.227	.782	-.143	-.236	-.140
TB5	-.200	.822	-.188	-.221	-.166
TB6	-.179	.784	-.199	-.139	-.187

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Table 3: Rotated Component Matrix

a. Rotation converged in 6 iterations.

This research employed Principal Component Analysis (PCA) with Varimax rotation to conduct an exploratory factor analysis of the measurement items. The rotated component matrix revealed a clear five-factor structure, which corresponded well with the theoretically expected dimensions: Peer Relationship (PR), Tendency of Bullying (TB), Mindfulness (M), Self-Esteem (SE), and Parenting Style (PS). According to Hair et al. (2019), factor loadings above

0.60 are considered significant, and low cross-loadings support strong discriminant validity.

The factor loading structure was clear, with no substantial cross-loadings, indicating good discriminant validity among the constructs. The clustering of items was consistent with the theoretical assumptions, providing further support for the structural validity of the measurement tool (Byrne, 2016). The identified factor structure is psychometrically sound and can be employed in subsequent Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM).

RELIABILITY ANALYSIS**Table 4: Reliability Analysis**

Reliability Analysis				
Variable	Item	CITC	Cronbach's Alpha if Item Deleted	Cronbach's α
M	M1	.738	.884	0.902
	M2	.697	.890	
	M3	.686	.891	
	M4	.761	.880	
	M5	.780	.876	
	M6	.742	.882	
PS	PS1	.665	.840	0.864
	PS2	.656	.842	
	PS3	.717	.826	
	PS4	.699	.831	
	PS5	.680	.836	
SE	SE1	.749	.869	0.894
	SE2	.706	.878	
	SE3	.769	.863	
	SE4	.743	.869	
	SE5	.730	.873	
PR	PR1	.756	.905	0.918
	PR2	.746	.906	
	PR3	.730	.908	
	PR4	.776	.903	
	PR5	.655	.916	
	PR6	.799	.901	
	PR7	.782	.903	
TB	TB1	.761	.918	0.928
	TB2	.843	.909	
	TB3	.756	.924	
	TB4	.804	.916	
	TB5	.858	.906	
	TB6	.785	.916	

This study conducted a reliability analysis on five latent constructs—Mindfulness (M), Parenting Style (PS), Self-Esteem (SE), Peer Relationship (PR), and Tendency of Bullying (TB)—to examine the internal consistency of the measurement instruments. All Cronbach's α coefficients exceeded 0.85, indicating excellent internal reliability (Nunnally & Bernstein, 1994). Specifically, the mindfulness scale demonstrated a Cronbach's α of 0.902, with corrected item-total correlations (CITCs) ranging from 0.686 to 0.780. None of the items, if deleted, would significantly increase the overall reliability, confirming the structural robustness of the scale.

The parenting style scale yielded an α of 0.864, with CITCs between 0.656 and 0.717, suggesting that all items contributed meaningfully to the construct. The self-esteem scale achieved an α of 0.894, with CITCs ranging from 0.706 to 0.769, also indicating strong internal consistency. Notably, the peer relationship scale had the highest reliability ($\alpha = 0.918$) among all variables, with CITCs between 0.655 and 0.799, reflecting superior consistency in measuring peer dynamics.

The bullying tendency scale recorded the highest Cronbach's α (0.928), with CITCs between 0.756 and 0.858, indicating excellent coherence among its items. These findings confirm the high measurement quality of all scales and support their suitability for subsequent structural equation modeling (SEM) and other parametric statistical analyses.

STRUCTURAL EQUATION MODELLING (SEM)

INTEGRATED MEASUREMENT MODEL

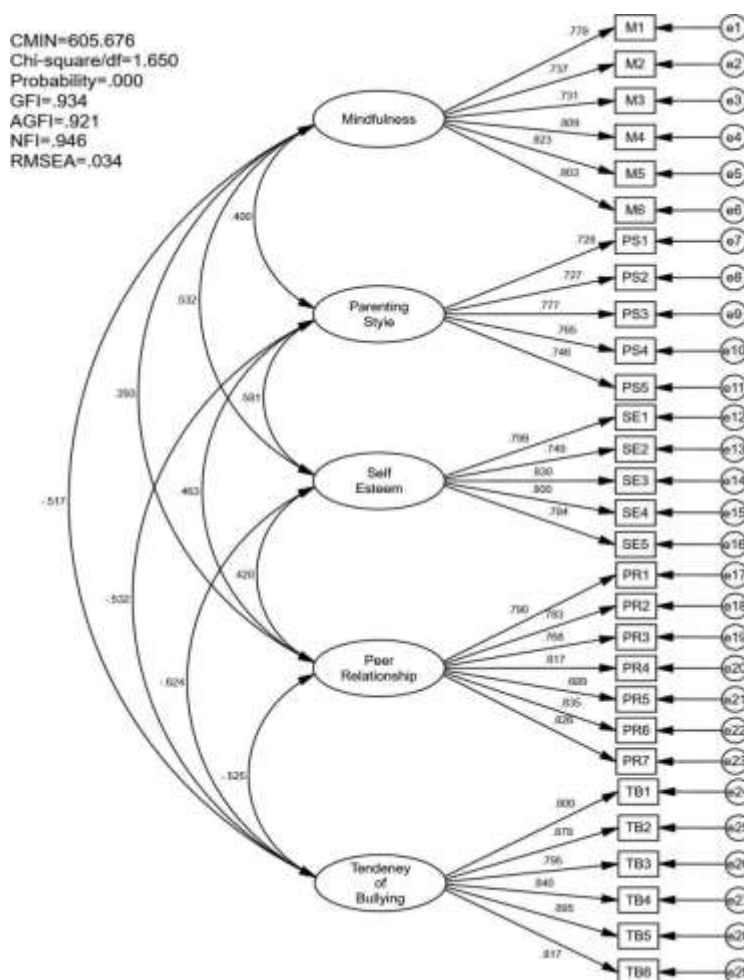


Figure 3: Integrated Measurement Model

VALIDITY AND RELIABILITY**Table 5: The measurement of validity and reliability**

Validity				
Variable	Item	Loading (Convergent Validity)	Construct Reliability	AVE (Construct Validity)
M	M1	0.779	0.917	0.603
	M2	0.737		
	M3	0.731		
	M4	0.809		
	M5	0.823		
PS	PS1	0.728	0.903	0.561
	PS2	0.727		
	PS3	0.777		
	PS4	0.765		
	PS5	0.746		
SE	SE1	0.799	0.894	0.629
	SE2	0.749		
	SE3	0.83		
	SE4	0.8		
	SE5	0.784		
PR	PR1	0.79	0.937	0.594
	PR2	0.783		
	PR3	0.768		
	PR4	0.817		
	PR5	0.689		
	PR6	0.835		
	PR7	0.826		
TB	TB1	0.8	0.946	0.701
	TB2	0.878		
	TB3	0.795		
	TB4	0.84		
	TB5	0.895		
	TB6	0.817		

Following guidelines proposed by Fornell and Larcker (1981) and Hair et al. (2019), the validity results shows that all factor loadings exceed the threshold of 0.70, indicating that each item contributes significantly to its corresponding latent construct. This confirms strong convergent validity across all variables: Mindfulness (M), Parenting Style (PS), Self-Esteem (SE), Peer Relationship (PR), and Tendency of Bullying (TB).

Construct reliability (CR) values for all constructs ranged from 0.894 (SE) to 0.946 (TB), all surpassing the recommended cutoff of 0.70, which indicates a high level of internal consistency among the measurement items. This supports that each construct is measured reliably by its observed indicators, with TB and PR demonstrating particularly high reliability ($CR > 0.93$).

In terms of construct validity, the AVE values range from 0.561 (PS) to 0.701 (TB). All constructs exceed the 0.50 threshold, indicating that the majority of the variance is captured by the latent variable rather than by measurement error. Notably, TB demonstrated the strongest convergent validity with an AVE of 0.701, followed by SE (0.629) and M (0.603), suggesting that these constructs are particularly well-defined by their items. The AVE of PR (0.594) and PS (0.561) also meet acceptable standards, ensuring adequate explanatory power.

In summary, the measurement model shows robust psychometric properties. The results confirm that the latent constructs exhibit satisfactory convergent validity, strong internal reliability, and sufficient construct validity, which support the suitability of these measurement instruments for subsequent structural equation modeling (SEM).

DISCRIMINANT VALIDITY AND RELATED ANALYSIS

Table 6 Discriminant validity

	M	PS	SE	PR	TB
M	0.781				
PS	.359	0.749			
SE	.484	.512	0.793		
PR	.276	.406	.378	0.788	
TB	-.485	-.489	-.575	-.494	0.838

Table 6 presents the results of discriminant validity analysis based on the Fornell-Larcker criterion (Fornell & Larcker, 1981). Diagonal values (in bold) represent the square roots of Average Variance Extracted (AVE) for each latent construct, while the off-diagonal values indicate the correlations between constructs.

All constructs meet the Fornell-Larcker requirement: the square root of AVE is greater than the corresponding inter-construct correlations. The square root of AVE for Mindfulness (M) is 0.781, which is greater than its correlations with Parenting Style (0.359), Self-Esteem (0.484), Peer Relationship (0.276), and Tendency of Bullying (-0.485).

Similarly, for Tendency of Bullying (TB), the AVE square root is 0.838, exceeding all its inter-construct correlations in absolute terms. These results confirm good discriminant validity across the five constructs.

Furthermore, the negative correlations between Tendency of Bullying and the other constructs (e.g., Mindfulness, Self-Esteem, Parenting Style, Peer Relationship) are theoretically consistent, supporting the hypothesized inverse relationships. The relatively high correlations between Self-Esteem and Parenting Style ($r = 0.512$), and between Self-Esteem and Mindfulness ($r = 0.484$), also align with prior literature on adolescent psychological development (Orth & Robins, 2014).

STRUCTURAL MODELS

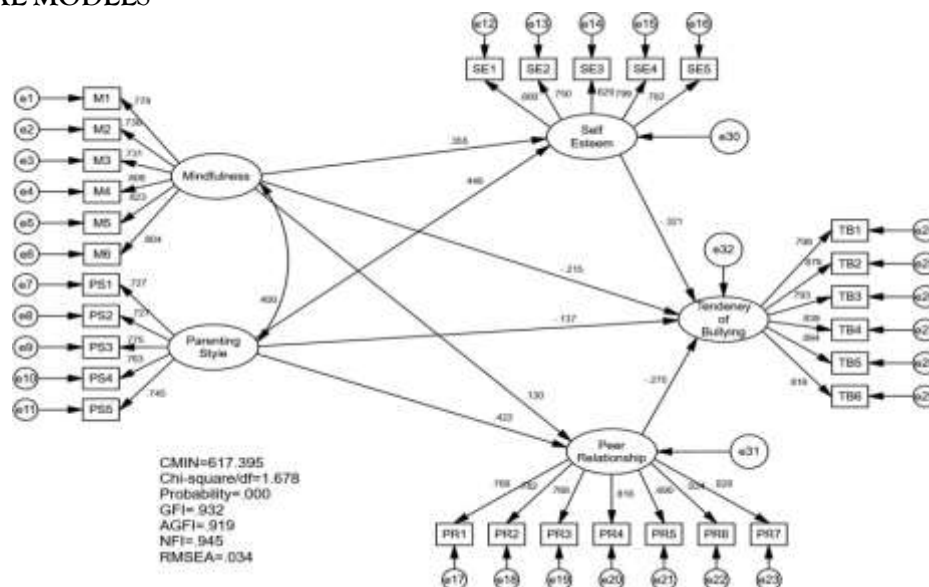


Figure 4: Structural Models

This structural equation model was used to examine the relationships among Mindfulness, Parenting Style, Self-Esteem, Peer Relationship, and Tendency of Bullying. The model demonstrates good fit to the data, as indicated by several key fit indices: $\chi^2/df = 1.678$ (<3), GFI = 0.932, AGFI = 0.919, NFI = 0.945, and RMSEA = 0.034. These values meet or exceed the commonly accepted thresholds (Hair et al., 2019), indicating the structural model is statistically acceptable. All observed items have standardized factor loadings above 0.70, indicating strong convergent validity. For example, items like M5 (0.823), PS3 (0.775), SE3 (0.828), and TB5 (0.894) are strongly representative of their respective latent constructs. The error terms (e1–e32) are normally distributed

and within acceptable limits, supporting model adequacy.

TESTING OF DIRECT RELATIONSHIPS

Table 6: Hypotheses Results of Direct Relationships

Hypothesis	Path	Standard Estimate	S.E.	C.R.	P	RESULT
H1	M → TB	-0.197	0.039	-5.061	***	Supported
H2	PS → TB	-0.177	0.064	-2.764	0.006	Supported
H3	M → SE	0.292	0.036	8.108	***	Supported
H4	PS → SE	0.52	0.055	9.496	***	Supported
H5	M → PR	0.094	0.033	2.822	0.005	Supported
H6	PS → PR	0.43	0.051	8.344	***	Supported
H7	SE → TB	-0.358	0.057	-6.336	***	Supported
H8	PR → TB	-0.344	0.051	-6.684	***	Supported

Table 6 summarizes the results of hypothesis testing for the direct paths in the structural model using Structural Equation Modeling (SEM). All eight hypothesized paths were statistically significant, supporting the theoretical framework.

Specifically, Mindfulness (M) significantly negatively predicted Tendency of Bullying (TB) ($\beta = -0.197$, $p < 0.001$), supporting H1. This suggests that individuals with higher levels of mindfulness are less likely to engage in bullying behaviors, aligning with prior findings on emotion regulation and aggression reduction (Brown & Ryan, 2003). Similarly, Parenting Style (PS) was also negatively associated with TB ($\beta = -0.177$, $p = 0.006$), validating H2 and indicating the critical role of parenting in mitigating aggressive tendencies.

On the positive side, M and PS both positively influenced Self-Esteem (SE) (H3: $\beta = 0.292$, $p < 0.001$; H4: $\beta = 0.520$, p

< 0.001), indicating that mindful awareness and supportive parenting contribute to a stronger self-concept in adolescents. Additionally, both M and PS were positively related to Peer Relationship (PR) (H5: $\beta = 0.094$, $p = 0.005$; H6: $\beta = 0.430$, $p < 0.001$), highlighting their social benefits.

Finally, Self-Esteem and Peer Relationship each had a significant negative effect on Tendency of Bullying (H7: $\beta = -0.358$, $p < 0.001$; H8: $\beta = -0.344$, $p < 0.001$). These results confirm that higher self-worth and better peer bonds act as protective factors against bullying behavior (Salmivalli, 2010).

TESTING OF MEDIATING RELATIONSHIPS H9: M→SE→TB

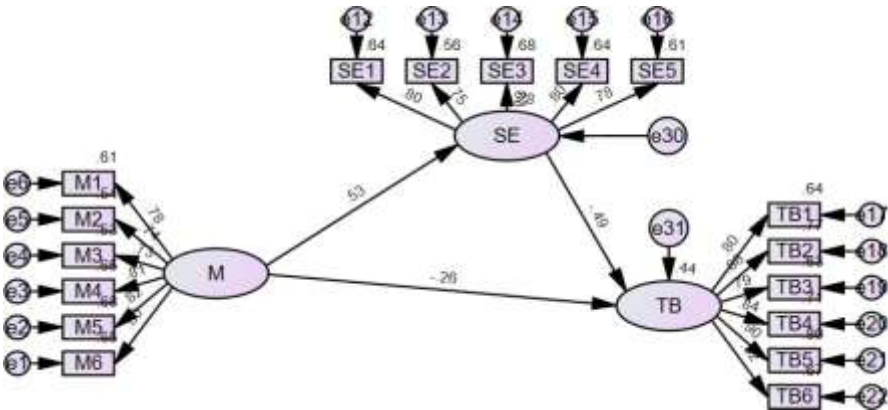


Figure 5: H9 Hypothesis Mediating Model of Bootstrapping Procedure Table 7: The Mediating Effect of SE in the Relationship Between M and TB

Table 7: The Mediating Effect of SE in the Relationship Between M and TB

Relationship		M→SE→TB		
Effect	Estimate	Confidence Interval		P value
		Lower Bound	Upper Bound	
Indirect Effect	-.239	-.304	-.191	.010
Direct Effect	-.238	-.322	-.162	.010
Total Effect	-.477	-.541	-.410	.010

The mediation analysis reveals that Self-Esteem (SE) partially mediates the relationship between Mindfulness (M) and Tendency of Bullying (TB). The indirect effect of M on TB through SE is significant (Estimate = -0.239, 95% CI = [-0.304, -0.191], $p = 0.010$), indicating that higher mindfulness levels are associated with increased self-esteem, which in turn reduces bullying behavior.

Moreover, the direct effect of M on TB remains statistically significant (Estimate = -0.238, 95% CI = [-0.322, -0.162], $p = 0.010$), suggesting a partial mediation rather than full mediation. This implies that mindfulness not only reduces bullying by enhancing self-esteem but also exerts a direct suppressive influence on bullying tendencies.

The total effect (Estimate = -0.477, 95% CI = [-0.541, -0.410], $p = 0.010$) is also significant, indicating that the cumulative impact of mindfulness on bullying—both direct and through self-esteem—is substantial. These results underscore the critical role of self-esteem as a psychological mechanism linking internal self-regulation capacities (mindfulness) to behavioral outcomes (bullying).

H10: PS→SE→TB

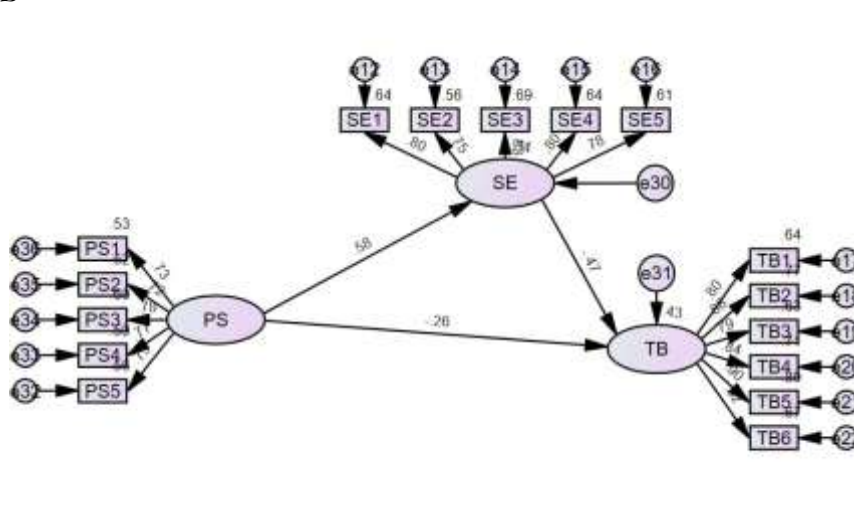


Figure 6: H10 Hypothesis Mediating Model of Bootstrapping Procedure

Table 8: The Mediating Effect of SE in the Relationship Between PS and TB

Relationship		PS→SE→TB		P value	Conclusion
Effect	Estimate	Confidence Interval			
		Lower Bound	Upper Bound		
Indirect Effect	-.359	-.469	-.279	.010	Partial Mediation
Direct Effect	-.332	-.442	-.200	.010	
Total Effect	-.690	-.805	-.584	.010	

The structural equation modeling results demonstrate that Self-Esteem (SE) significantly mediates the relationship between Parenting Style (PS) and Tendency of Bullying (TB). The indirect effect of PS on TB through SE is statistically significant (Estimate = -0.359, 95% CI = [-0.469, -0.279], $p = .010$), indicating that positive parenting contributes to higher self-esteem in adolescents, which in turn reduces their likelihood of engaging in

bullying behaviors.

The direct effect of PS on TB remains significant even after accounting for the mediation pathway (Estimate = -0.332, 95% CI = [-0.442, -0.200], $p = .010$), suggesting a partial mediation model. This implies that parenting style influences bullying both directly—perhaps through behavioral modeling or discipline practices—and indirectly via the enhancement of adolescents’ self-worth.

The total effect of PS on TB (Estimate = -0.690, 95% CI = [-0.805, -0.584], $p = .010$) is strong and significant, indicating that parenting style is a robust predictor of bullying tendency. These findings highlight the crucial role of family socialization processes and psychological development (i.e., self-esteem) in shaping adolescents’ social behaviors.

H11: M→PR→TB

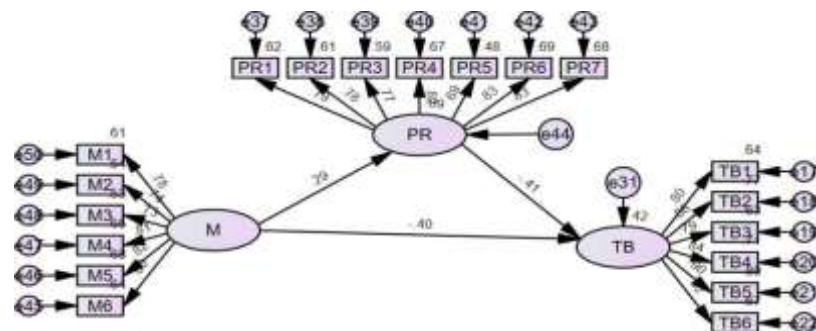


Figure 7: H11 Hypothesis Mediating Model of Bootstrapping Procedure

Table 9: The Mediating Effect of PR in the Relationship Between M and TB

Relationship		M→PR→TB		P value	Conclusion
Effect	Estimate	Confidence Interval			
		Lower Bound	Upper Bound		
Indirect Effect	-.111	-.156	-.076	.010	
Direct Effect	-.367	-.441	-.303	.010	Partial
Total Effect	-.478	-.541	-.412	.010	Mediation

The results provide strong evidence for a partial mediating effect of Peer Relationship (PR) on the association between Mindfulness (M) and Bullying Tendency (TB). The indirect effect is statistically significant (Estimate = -0.111, 95% CI [-0.156, -0.076], $p = .010$), indicating that higher levels of mindfulness contribute to improved peer relationships, which in turn reduce bullying behaviors among adolescents.

In addition to the mediating path, the direct effect of mindfulness on bullying remains significant (Estimate = -0.367, 95% CI [-0.441, -0.303], $p = .010$), suggesting that mindfulness directly inhibits aggressive or bullying behaviors—possibly through enhanced emotional regulation, self-awareness, and prosocial cognition.

The total effect of mindfulness on bullying is also robust (Estimate = -0.478, 95% CI [-0.541, -0.412], $p = .010$), underscoring its central role in adolescent behavioral development. These findings imply that peer-related social mechanisms partially transmit the protective effect of mindfulness and should be considered in anti-bullying interventions and school-based mindfulness training programs.

H12: PS→PR→TB

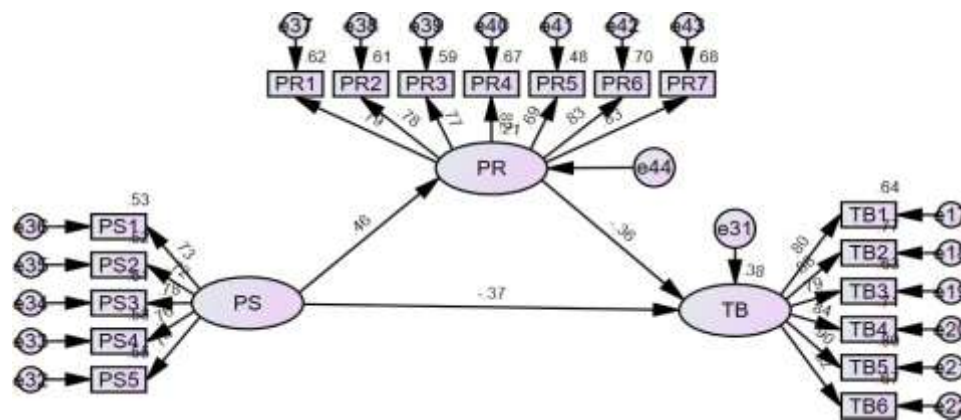


Figure 8: H12 Hypothesis Mediating Model of Bootstrapping Procedure Table 10: The Mediating Effect of PR in the Relationship Between PS and TB

Table 10: The Mediating Effect of PR in the Relationship Between PS and TB					
Relationship		PS→PR→TB			
Effect	Estimate	Confidence Interval		P value	Conclusion
		Lower Bound	Upper Bound		
Indirect Effect	-.214	-.287	-.154	.010	Partial
Direct Effect	-.477	-.586	-.351	.010	
Total Effect	-.691	-.806	-.587	.010	Mediation

The analysis of mediation effects reveals that Peer Relationship (PR) significantly mediates the relationship between Parenting Style (PS) and Bullying Tendency (TB). The indirect effect is statistically significant (Estimate = -0.214, 95% CI [-0.287, -0.154], $p = .010$), indicating that more positive or authoritative parenting styles are associated with better peer relationships, which in turn reduce adolescents' propensity to engage in bullying behavior.

In addition, the direct effect of PS on TB remains significant and negative (Estimate = -0.477, 95% CI [-0.586, -0.351], $p = .010$), suggesting that parenting styles exert both direct and indirect influences on bullying. The total effect of -0.691 further highlights the strong predictive power of PS on TB (95% CI [-0.806, -0.587], $p = .010$). These findings are consistent with prior research emphasizing the critical role of family socialization practices in adolescent behavioral outcomes. The mediating role of peer relationships suggests that parenting styles not only shape personal traits but also impact adolescents' social functioning, which in turn influences their likelihood of bullying. This underlines the importance of family-based interventions combined with school-based peer relationship enhancement programs.

DISCUSSION

This study investigated the complex interplay between mindfulness, parenting style, self-esteem, peer relationship, and bullying tendencies among primary school students in Zhengzhou, China. The findings provide strong empirical support for the hypothesized relationships within the proposed conceptual framework.

Consistent with Social Cognitive Theory (Bandura, 1977), the results suggest that mindfulness, as an internalized regulatory mechanism, significantly reduces bullying tendencies by fostering self-awareness and emotional control. Likewise, supportive parenting practices—particularly authoritative parenting—were found to enhance both self-esteem and peer relationship quality, indirectly reducing bullying involvement. This supports prior findings that parenting style is foundational in shaping children's behavioral outcomes (Zhang, 2021; Wu, 2021). Furthermore, the role of peer relationships, as conceptualized in Group Socialization Theory (Harris, 1995), emerged as both a protective and mediating factor. Children with positive peer relationships were significantly

less likely to engage in bullying behaviors, echoing the assertion that group norms and acceptance are powerful determinants of social conduct (Salmivalli & Peets, 2018).

The mediation analysis revealed that self-esteem and peer relationships partially mediated the relationships between mindfulness/parenting style and bullying tendencies. This partial mediation implies that while mindfulness and parenting style have direct effects on bullying, their impact is also significantly channeled through psychological and social pathways. These findings highlight the importance of multi-layered intervention strategies that simultaneously target emotional development and social relationships.

Given the growing incidence of bullying in Chinese primary schools—especially in urban areas such as Zhengzhou where pressures from academic competition and social transition are high—these results have profound practical implications. Programs that integrate mindfulness training with parent education and peer support systems could prove effective in mitigating bullying behaviors in early education settings.

CONCLUSION

This study contributes to the growing body of literature on school bullying by proposing and validating a comprehensive psychosocial model grounded in Social Cognitive Theory and Group Socialization Theory. By integrating mindfulness, parenting style, self-esteem, and peer relationship into a single framework, the study identifies key pathways through which bullying tendencies develop among primary school children.

The findings suggest that interventions aimed at fostering mindfulness and improving parenting practices can significantly reduce bullying by enhancing children's self-esteem and promoting healthier peer relationships. Partial mediation effects underscore the necessity of addressing both internal and external factors in bullying prevention programs.

Future research should consider longitudinal designs to examine causal relationships over time and explore cultural variations in the bullying mechanisms identified. Additionally, expanding the model to include school climate and teacher-student relationships may further enrich our understanding of bullying behavior.

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