

Predicting Behavioral Problems of Sixth-Grade Elementary Students Based on Digital Media Use and Parent-Child Interaction Quality with the Mediating Role of Emotion Regulation Level

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ABSTRACT

This study aimed to predict behavioral problems in sixth-grade students based on digital media use and parent-child interaction quality, with the mediating role of emotion regulation. This applied research employed a descriptive-correlational design using structural equation modeling (SEM). The statistical population included all sixth-grade students in District 5 of Isfahan in the academic year 2025-2026 (N = 3419). A sample of 343 students was selected using combined stratified random-cluster sampling. Instruments included the Child Behavior Checklist, Media Use Questionnaire, Parent-Child Relationship Scale (Pianata, CPRS), and Emotion Regulation Questionnaire (Gross & John, ERQ). Data were analyzed using SPSS-26 and Smart-PLS 3 via Pearson correlation and path analysis with bootstrapping. SEM results showed excellent model fit (CMIN/df = 0, GFI = 1, NFI = 1, CFI = 1, IFI = 1). Digital media use had no significant direct effect on behavioral problems ($\beta = 0.04$, $T = 0.65$, $p = 0.514$); however, it indirectly increased behavioral problems by increasing the suppression strategy ($\beta = 0.24$, $p < 0.0001$). Parent-child interaction quality directly increased behavioral problems ($\beta = -0.28$, $T = -4.01$, $p < 0.0001$) and indirectly through reducing suppression ($\beta = 0.24$, $p < 0.0001$). Moreover, parent-child interaction quality was associated with reduced behavioral problems both directly ($\beta = -0.07$, $p = 0.003$) and through increasing reappraisal ($\beta = 0.13$, $p < 0.007$). Emotion regulation acts as a key mediating mechanism. These findings emphasize the necessity of designing multi-faceted interventions to manage media consumption, improve family interactions, and teach emotion regulation skills.

Keywords: Behavioral Problems, Digital Media, Parent-Child Relationship, Emotion Regulation, Students.

1. Introduction

Behavioral problems during late childhood and the transition to early adolescence represent one of the most important concerns in developmental psychology, school counseling, and child mental health. Elementary school is not merely an educational period; it is a foundational developmental context in which children's emotional competencies, social relationships, self-control capacities, academic habits, and behavioral patterns are shaped and stabilized. Sixth-grade students occupy a particularly sensitive developmental position because they are approaching adolescence while still being embedded in the structures of childhood, family dependency, and primary schooling. At this stage, emotional reactivity increases, peer relationships become more salient, academic expectations become more complex, and the child's exposure to digital environments becomes broader and less directly supervised. Therefore, behavioral problems in this age group should not be understood only as isolated symptoms, but as indicators of broader developmental adjustment or maladjustment within the interaction of family, school, media, and psychological self-regulation systems (Eisanejad et al., 2019; Roshani et al., 2022; Yang et al., 2025).

Behavioral problems in children are commonly classified into internalizing and externalizing domains. Internalizing problems include symptoms such as anxiety, depression, withdrawal, somatic complaints, and excessive fearfulness, whereas externalizing problems include aggression, rule-breaking behavior, impulsivity, oppositional behaviors, and conduct-related difficulties. Both forms can interfere with children's academic functioning, peer acceptance, family relationships, self-esteem, and long-term psychosocial development. Externalizing problems may create immediate difficulties in classroom management and parent-child conflict, while internalizing problems may remain less visible but contribute substantially to emotional distress and reduced academic engagement. Previous evidence has emphasized that children with behavioral difficulties may experience reduced school adjustment, peer rejection, emotional instability, and vulnerability to later psychological disorders, making early identification of predictive and mediating factors essential (Gallegos et al., 2023; Goulter et al., 2021; Khoshkerdar et al., 2020; Masoumi Zavariani et al., 2024).

The emergence and persistence of behavioral problems are multidetermined. No single factor can sufficiently explain why some children show adaptive patterns while

others develop emotional or behavioral difficulties. Family variables, parental practices, parent-child emotional climate, child temperament, cognitive and executive functioning, social environment, school demands, and media exposure all contribute to the development of behavioral adjustment. Among these factors, two domains appear especially relevant in contemporary childhood: digital media use and the quality of parent-child interaction. Digital media has become a dominant feature of children's daily life, while parent-child interaction remains the primary context through which children learn emotional security, social rules, communication patterns, and self-regulation. The simultaneous examination of these two domains is therefore necessary for understanding behavioral problems in the current generation of school-age children (Driscoll & Pianta, 2011; Mahmoudian et al., 2015; Soltani et al., 2019).

Digital media use has transformed children's developmental ecology. Children increasingly access smartphones, tablets, online videos, games, social platforms, and internet-based entertainment or educational content. Digital media can provide learning opportunities, cognitive stimulation, communication, and recreation; however, excessive, poorly regulated, or developmentally inappropriate media exposure may be associated with behavioral, emotional, attentional, and social difficulties. Studies on young children have shown that high levels of screen exposure and problematic digital device use are associated with behavioral changes, attention problems, emotional dysregulation, irritability, and reduced social interaction. In particular, the developmental consequences of digital media depend not only on duration of use but also on content, context, parental supervision, child vulnerability, and whether media use replaces sleep, play, physical activity, family communication, and direct social learning (Abhijit et al., 2025; Kaur et al., 2024; Shutzman & Gershy, 2023).

The relationship between digital media and behavioral problems is complex rather than purely linear. Some children may use digital media without obvious behavioral consequences, while others may develop problematic use patterns that intensify emotional and behavioral difficulties. Media may serve as a tool for distraction, avoidance, emotional escape, or immediate gratification, particularly among children who have weak self-regulation skills or limited emotional support. From this perspective, digital media exposure may not directly cause behavioral problems in all children, but it may increase risk through mechanisms such as reduced frustration tolerance, emotional

suppression, attentional fragmentation, sleep disruption, and displacement of family interaction. This view is supported by research indicating that media use can function as a coping strategy for managing negative emotional states, while parental mediation and the parent-child relationship can influence whether internet use becomes adaptive or problematic (Li et al., 2022; Schramm & Cohen, 2018; Soltani et al., 2019).

Parent-child interaction quality is another central determinant of children's behavioral development. The parent-child relationship is the first relational environment in which the child experiences safety, emotional recognition, discipline, boundaries, responsiveness, and communication. Warm, responsive, and structured parent-child interactions provide children with models of emotional expression, conflict resolution, empathy, and behavioral control. Conversely, conflictual, rejecting, inconsistent, or overly controlling interactions can increase emotional insecurity and maladaptive behavior. Parent-child closeness may protect children against behavioral problems by strengthening emotional security and social competence, whereas parent-child conflict may reinforce oppositional behavior, emotional distress, and poor adjustment. The early parent-child relationship therefore serves as both a developmental foundation and a continuing regulatory context for school-age children (Driscoll & Pianta, 2011; Jimenez et al., 2019; Salamat et al., 2019).

Empirical findings support the importance of family functioning and parenting-related variables in predicting children's behavioral problems. Parenting styles, parental stress, maternal personality characteristics, and the broader family developmental context have been associated with internalizing and externalizing symptoms. Positive parenting interventions and maternal empowerment programs have been shown to reduce children's behavioral problems and improve adjustment-related outcomes, suggesting that behavioral difficulties are not fixed traits but modifiable developmental outcomes influenced by family processes. Similarly, interventions that improve parental skills, emotional sensitivity, and parent-child communication may reduce aggression, increase responsibility, and improve self-esteem among children with behavioral difficulties (Eisanejad et al., 2019; Khoshkerdar et al., 2020; Lohrassbi et al., 2023; Moshirifar et al., 2023).

The role of parent-child interaction is also evident among children with neurodevelopmental or behavioral vulnerabilities. For example, children with attention-deficit/hyperactivity disorder may show behaviors that

increase parenting stress and negatively affect parent-child interaction, while improved child-centered working memory training can contribute to better parent-child relational patterns. This suggests that the relationship between child behavior and parent-child interaction is reciprocal: children's behavioral problems may strain the relationship, and poor relationship quality may further intensify behavioral problems. Therefore, examining parent-child interaction as a predictor of behavioral problems is theoretically and practically necessary, particularly in school-age populations where early intervention can prevent more stable maladaptive trajectories (Asgari et al., 2024; Cheung et al., 2022; Masoumi Zavariani et al., 2024).

Despite the importance of digital media use and parent-child interaction, their effects on behavioral problems are likely to operate through internal psychological mechanisms. One of the most important mechanisms is emotion regulation. Emotion regulation refers to the processes through which individuals influence the emotions they have, when they have them, how they experience them, and how they express them. Gross and John's model distinguishes between cognitive reappraisal and expressive suppression as two major emotion regulation strategies. Cognitive reappraisal involves changing the meaning of an emotional situation before the emotional response is fully generated, whereas expressive suppression involves inhibiting emotional expression after the emotional response has already occurred. Reappraisal is generally considered a more adaptive strategy associated with better affective, interpersonal, and well-being outcomes, whereas suppression is often linked with poorer emotional, relational, and psychological functioning (Gross & John, 2003; Hasani, 2011; Sadat Rasul & Alizadeh Fard, 2021).

Emotion regulation is especially important in childhood because children are still developing the cognitive, social, and neurological capacities needed to understand, label, tolerate, and modulate emotional states. Children who can reinterpret stressful events, delay impulsive responses, communicate feelings, and seek appropriate support are less likely to express emotional distress through aggression, withdrawal, defiance, or rule-breaking. Conversely, children who rely on suppression may conceal distress without resolving it, which can increase physiological arousal, interpersonal misunderstanding, irritability, and later behavioral outbursts. Emotion regulation therefore provides a plausible mediating pathway through which both family interaction and media use may affect behavioral problems

(Bigdeli et al., 2013; Nejatifar et al., 2020; Sadat Rasul & Alizadeh Fard, 2021).

The mediating role of emotion regulation can be theoretically explained through both family-based and media-based developmental mechanisms. In the family context, parents model emotion regulation strategies directly through their own reactions to stress, conflict, anger, sadness, and frustration. They also socialize children's emotions by validating or dismissing emotional experiences, encouraging expression or suppression, and providing constructive or punitive responses to distress. A warm and close parent-child relationship may help children develop reappraisal by allowing them to discuss emotional situations, reinterpret difficulties, and learn flexible coping strategies. In contrast, conflictual or emotionally invalidating relationships may teach children to suppress emotions or express them through maladaptive behavior. Thus, parent-child interaction may affect behavioral problems partly by shaping the child's emotion regulation style (Cheung et al., 2022; Driscoll & Pianta, 2011; Jimenez et al., 2019).

In the media context, emotion regulation may also explain why digital media use is associated with behavioral problems. Children may use digital devices to escape boredom, reduce distress, avoid family conflict, or regulate unpleasant emotions. Over time, this pattern may weaken active coping and increase dependence on external stimulation. Excessive media use may also expose children to fast-paced, emotionally stimulating, or aggressive content, reduce opportunities for face-to-face emotional learning, and limit practice in frustration tolerance. When children lack adaptive regulation strategies, they may be more likely to use digital media as an avoidant coping method and more likely to show behavioral problems when access is restricted or when emotional needs are unmet. Therefore, digital media use may influence behavioral problems not only through exposure but also through its relationship with emotion regulation strategies (Li et al., 2022; Schramm & Cohen, 2018; Shutzman & Gershly, 2023).

Several empirical gaps justify the present study. First, many studies have examined digital media use and children's behavioral problems, but fewer have clarified whether the effect of media use is direct or mediated by emotion regulation. Second, research on parent-child interaction has often emphasized direct associations with adjustment, while less attention has been paid to the specific emotional mechanisms through which relationship quality influences behavioral outcomes. Third, many previous

studies have focused on preschool children, clinical groups, adolescents, or children referred to counseling centers, whereas sixth-grade elementary students in the normal school population require more focused investigation. Fourth, the simultaneous modeling of digital media use, parent-child interaction quality, emotion regulation, and behavioral problems can provide a more integrated account of contemporary child development than studies that examine these variables separately (Abhijit et al., 2025; Kaur et al., 2024; Masoumi Zavariani et al., 2024; Moshirifar et al., 2023).

From an applied perspective, identifying the mediating role of emotion regulation has direct implications for prevention and intervention. If digital media use and parent-child interaction influence behavioral problems through emotion regulation, then interventions should not be limited to reducing screen time or advising parents to improve discipline. Instead, comprehensive programs should include media literacy, parental mediation, positive parent-child communication, emotional coaching, and direct training in adaptive emotion regulation strategies such as cognitive reappraisal. Such an approach is consistent with evidence showing that parenting training, parent-centered interventions, empowerment programs, and culturally grounded educational strategies can improve behavioral and emotional outcomes in children (Eisanejad et al., 2019; Lohrassbi et al., 2023; Nejatifar et al., 2020; Roshani et al., 2022).

Accordingly, the present study is based on the assumption that behavioral problems among sixth-grade students are shaped by the interaction between external developmental contexts and internal self-regulatory processes. Digital media use represents a contemporary environmental exposure that may become problematic when it is excessive, poorly supervised, emotionally avoidant, or disconnected from healthy routines. Parent-child interaction quality represents the core relational context that can either buffer or intensify children's behavioral difficulties. Emotion regulation represents the psychological mechanism through which these external factors may be translated into adaptive or maladaptive behavior. By integrating these three domains, the study offers a comprehensive framework for understanding behavioral problems among sixth-grade elementary students in the current digital and family context (Gross & John, 2003; Mahmoudian et al., 2015; Yang et al., 2025).

Therefore, the aim of the present study was to predict behavioral problems of sixth-grade elementary school

students based on the amount of digital media use and parent-child interaction quality, with the mediating role of emotion regulation level.

2. Methods and Materials

2.1. Study Design and Participants

This research is applied in terms of purpose and descriptive-correlational in terms of data collection method. The research design is of the Structural Equation Modeling (SEM) type, conducted to predict students' behavioral problems based on the variables of digital media use and parent-child interaction quality, considering the mediating role of emotion regulation.

The statistical population of this research consisted of all male and female sixth-grade elementary students in District 5 of Isfahan during the 2025-2026 academic year, totaling 3419 individuals (1449 girls and 1700 boys). Using Cochran's formula and considering an error of 0.05, the required sample size was estimated at 343 individuals. This number was increased to 370, accounting for the potential non-return rate of questionnaires.

A combined (random stratified-multistage cluster) sampling method was used in this research. First, using stratified sampling, the share of each gender (girls and boys) from the total sample was determined proportionally to the main population (200 girls and 170 boys). Then, using multistage cluster sampling and obtaining permission from the District 5 Education Department, 20 schools (9 girls' schools and 11 boys' schools) were randomly selected. From each school, 2 classes, and from each class, 10 students were randomly selected to participate in the research.

The reason for choosing this sampling method was the large geographical dispersion of schools and students in District 5 of Isfahan, as well as the necessity of maintaining gender proportionality in the sample, which made access to all members of the population challenging. This method provided better generalizability of the research results while saving time and cost.

It is noteworthy that the questionnaires related to intrapersonal variables (such as the Media Consumption Questionnaire and the Emotion Regulation Questionnaire) were completed by the students themselves, while the questionnaires related to observable behaviors (the Behavioral Problems Questionnaire and the Parent-Child Interaction Questionnaire) were completed by the parents.

Since the data in this research were collected from two separate sources (parents and their children), managing and

matching these data was an important and crucial step in the present research. Therefore, ensuring the correct pairing of each student's responses with their parent's responses was important; this was achieved by assigning a common identification code between the student and their parents.

The inclusion criteria for participants in this research were: studying in the sixth grade of elementary school, residing in District 5 of Isfahan Education, parental written consent for participation and completion of an informed consent form, and no confirmed psychiatric disorders or intellectual disabilities in the academic record. Also, students had to have no history of taking psychiatric medications and possess the ability to read and understand the questionnaire items.

Conversely, the exclusion criteria from the research included: unwillingness to continue cooperation, non-response to 20% of the questionnaire items, identification of any psychiatric disorder, and providing incomplete or random answers to the questionnaires. Also, if any severe stressful life event occurred for the student that could affect the research results, the individual was withdrawn from the research process.

With full adherence to ethical principles, informed written consent was obtained from parents and sixth-grade students. First, a complete consent form including the objectives, methods, and participants' rights was provided to the parents, and student participation was conditional upon parental consent. Then, a simplified and understandable form was provided to obtain the consent of the students themselves. All information was kept coded and confidential, and participants were assured that they could withdraw from the research at any stage. Finally, after providing the necessary guidance and explanations to parents and students (in the form of brochures, in-person visits, and phone conversations), the electronic link to the questionnaires of this research, prepared by the researchers on the Porsline website, was provided to the participating sample via domestic messengers, and the research sample completed the questionnaires with utmost care and honesty.

2.2. Measures

1) Child Symptom Inventory (CSI-4) (Parent Form): This questionnaire is a behavior rating scale first designed by Sprafkin and Gadow based on the DSM-III classification under the name SLUG to screen 18 behavioral and emotional disorders in children aged 5 to 12. It was finally revised in 1994 with the publication of the fourth edition of the DSM-

IV with minor changes and published as CSI-4. Like its previous versions, CSI-4 has both parent and teacher forms. The parent form has 112 questions designed for 11 major groups and one additional group of behavioral disorders. Based on the content of the CSI-4 questionnaire and related sources, the main factors and their items are as follows: Group A (Attention-Deficit/Hyperactivity Disorder) includes 18 items (1 to 18), which itself is divided into three subtypes: inattention (items 1-9), hyperactivity-impulsivity (items 10-18), and combined type. Group B (Oppositional Defiant Disorder) includes 8 items (19 to 26). Group C (Conduct Disorder) includes 15 items (27 to 41). Group D (Generalized Anxiety Disorder) includes 6 items (42 to 47). Group E includes several separate disorders: specific phobias (item 49), obsessive thoughts (item 50), compulsive acts (item 51), Post-Traumatic Stress Disorder (item 52), motor tics (item 53), and vocal tics (item 54). Group F (Schizophrenia) includes 5 items (55 to 59). Group G (Mood Disorders) includes Major Depressive Disorder (with criteria including items 60 or 61 as "a" and items 62 to 70 as "b") and Dysthymic Disorder (with items 45-60 and 64-70). Group H (Pervasive Developmental Disorders) includes Autistic Disorder (with items 72 to 83) and Asperger's Disorder (with items 72-75 and 80-83). Group I (Social Phobia) includes 4 items (84 to 87). Group J (Separation Anxiety Disorder) includes 8 items (88 to 95). There are also two additional questions related to bedwetting (96) and diurnal enuresis/encopresis (97). The scoring of items for all groups of this questionnaire, with three exceptions, is as follows: The option "never" scores zero (0); the option "sometimes" scores zero (0); the option "often" scores one (1); and the option "most of the time" scores one (1). The three exceptions in scoring the groups are component C (items 32 to 41), component E (all items), and questions 96-97, where the option "sometimes" scores 1. In component G, items 67-71, the answer "no" scores zero and the answer "yes" scores 1. In the research by Faryad et al. (2011), the validity, reliability, and standardization of the Child Symptom Inventory were conducted on working children in Karaj. Findings showed that the convergent validity coefficient of the parent form's depression subscale with the Maria Kovacs Depression Test was 0.30, indicating that the Child Symptom Inventory scale has acceptable validity. The reliability coefficient using internal consistency for the parent form was 0.94. Also, the intercorrelations of the parent form subscales were significant. The sensitivity of this tool based on the best cut-off scores of 4, 5, and 7 for Attention-Deficit/Hyperactivity Disorder, Oppositional

Defiant Disorder, and Conduct Disorder was 0.75, 0.89, and 0.89, respectively, and its specificity was obtained as 0.92, 0.91, and 0.90, respectively. Furthermore, the reliability of this questionnaire for the parent form has been reported as 0.90. Mohammad Esmail (2007) also concluded in his research that the reliability coefficients of the parent form of this tool, except for Social Phobia Disorder, were significant and acceptable in all examined domains, and also all subscales of both forms of the tool have content validity. The reliability of this questionnaire in Minaei's research (2005) in Iran using Cronbach's alpha coefficient for the entire questionnaire was obtained as 0.94. Also, reliability coefficients for various subscales have been reported between 0.65 and 0.92. The content and construct validity of this tool have been confirmed by psychometric specialists, and its correlation with other behavioral problem questionnaires has been reported as favorable.

2) Mahmoudian et al.'s Media Consumption Questionnaire (2015): This questionnaire was designed by Mahmoudian, Mirzaei, and Rezaei (2015) to measure the level of individuals' media consumption and consists of 11 questions that assess three separate dimensions: internet content consumption, use of foreign media, and interaction with domestic media. The questions of this questionnaire are purposefully categorized into three domains; such that questions 1 to 4 measure the internet dimension, questions 5 to 7 measure the foreign media dimension, and questions 8 to 11 measure the domestic media dimension. To calculate the final score for each dimension, the sum of scores for all questions related to that dimension must be calculated. Its scoring method is based on a five-point Likert scale from "very little" to "very much," which are assigned scores of 1 to 5, respectively. The interpretation of the results of this questionnaire is based on the principle that a higher total score in each dimension indicates a higher level of media consumption in that specific area. Conversely, obtaining a lower score indicates a lower level of the individual's interaction with that category of media. This tool enables separate analysis and comparison of the level of influence from each media source. The reliability of the questionnaire calculated by Mahmoudian et al. (2015) using Cronbach's alpha coefficient was 0.75 for the internet consumption subscale, 0.73 for foreign media, and 0.63 for domestic media. The face and content validity of this questionnaire has been confirmed by a group consisting of 10 professors in the fields of communication sciences and psychology. Also, exploratory factor analysis confirmed the three-factor structure of the questionnaire, and the KMO index was

obtained as 0.82. The factor loadings of items have been reported between 0.45 and 0.78, indicating appropriate construct validity.

3) Pianta's Child-Parent Relationship Scale (CPRS): The Parent-Child Relationship Questionnaire was designed and developed by Pianta in 1994. This questionnaire has 33 items. Pianta's Parent-Child Relationship Questionnaire generally consists of 4 factors. The Conflict factor includes items (2, 3, 4, 7, 12, 14, 17, 19, 21, 23, 24, 25, 26, 27, 28, 31, 32, and 33); the Closeness factor includes items (1, 5, 6, 8, 10, 13, 16, 29, and 30); the Dependency factor includes items (9, 11, 15, 18, 20, and 22); and the Overall Positive Relationship factor, which is obtained from the sum of the Closeness factor scores and the reverse scores of the Conflict and Dependency factors. The Parent-Child Relationship Questionnaire is a self-report questionnaire and is scored in the four factors and the overall factor based on a 5-point Likert scale (score 5 for "definitely true" and score 1 for "definitely not true"). To obtain the overall positive relationship score on this scale, the scores of items in the conflict and dependency domains must be reversed. A high score in any of the subscales indicates a greater presence of the mentioned components. In the research by Abareshi et al. (2009) in Iran, reliability with Cronbach's alpha coefficient was reported as 0.84 for the Conflict subscale, 0.70 for Closeness, 0.61 for Dependency, and 0.86 for the total score. In the research by Driscoll and Pianta (2011), reliability coefficients for the subscales were obtained as 0.75, 0.74, 0.69, and 0.80, respectively. The convergent validity of this questionnaire with the Parent-Child Interaction (PCI) questionnaire has been reported as 0.72, indicating desirable validity. Confirmatory factor analysis has also confirmed the three-factor structure of the questionnaire.

4) Gross and John's Emotion Regulation Questionnaire (ERQ) (2003): The Emotion Regulation Questionnaire was designed by Gross and John (2003). It has 10 items and 2

subscales named the Reappraisal subscale with 6 items (including items 1, 3, 5, 6, 7, and 8) and the Suppression subscale with 4 items (including items 2, 4, 6, and 9).

The scoring scale of this questionnaire is based on a seven-point Likert scale (strongly disagree with score 1; disagree with score 2; somewhat disagree with score 3; neutral with score 4; somewhat agree with score 5; agree with score 6; and strongly agree with score 7). In the original research by the developers, reliability with Cronbach's alpha coefficient was reported as 0.79 for the Reappraisal subscale and 0.73 for Suppression. In Iran, Hosseini (2011) reported a Cronbach's alpha coefficient of 0.79 for Reappraisal. In the research by Bigdeli et al. (2013), reliability coefficients of 0.83 for Reappraisal and 0.79 for Suppression were calculated. The construct validity of this questionnaire has been confirmed through confirmatory factor analysis and correlation with other emotion regulation scales.

2.3. Data Analysis

The data of this research were analyzed using SPSS-26 and Smart-PLS 3 software. In the descriptive statistics section, indicators such as mean, standard deviation, skewness, and kurtosis were used to describe the variables and examine the normality of the data distribution. In the inferential statistics section, Pearson correlation coefficient was used to examine the relationships between variables, and multiple regression and Structural Equation Modeling (SEM) with the path analysis method were used to test the hypotheses and the research model. The Bootstrap method was used to determine the significance of indirect effects and mediation.

3. Findings and Results

In this section; the examined sample is described based on demographic characteristics and questions (gender, age, and parents' education) in Table 1.

Table 1

Demographic Characteristics of Respondent Parents

Parent Respondent Gender	Gender	Frequency	Percent	Cumulative Percent
	Mother	232	67.6	67.6
	Father	111	32.4	100
	Total	343	100	
Parents' Age	20-25 years	29	8.5	8.5
	26-35 years	80	23.5	32.0
	36-45 years	151	44.3	76.2
	46-55 years	52	15.2	91.5

	56 years and above	31	9.1	100
	Total	343	100	
Parents' Education	Middle School Diploma	40	11.7	11.7
	High School Diploma	119	34.7	46.4
	Associate Degree	43	12.5	58.9
	Bachelor's Degree	82	23.9	82.8
	Master's Degree	40	11.7	94.5
	PhD	19	5.5	100
	Total	343	100	

The information contained in Table 1 indicates that the majority of respondents in this research were mothers. The statistical sample of the present study consists of individuals who are predominantly young and in the age range of 36 to 45 years. The education level of the participants is mainly at a low level. Most individuals, i.e., (34.7 percent of individuals) hold a high school diploma.

In this section, the information obtained from administering the questionnaires on the research sample has been analyzed descriptively. The information presented in this part of the findings includes mean and standard deviation.

Table 2

Descriptive Findings of the Components of Behavioral Problems, Amount of Digital Media Use, Parent-Child Interaction Quality, and Emotion Regulation Strategies

Component	Variable Dimensions	Frequency	Mean	Standard Deviation	Skewness	Kurtosis
Behavioral Problems	Anxiety-Depression	343	14.61	3.17	0.15	0.82
	Withdrawal-Depression	343	12.46	3.16	-0.16	0.27
	Somatic Complaints	343	10.76	1.92	-1.91	4.22
	Social Problems	343	3.82	2.73	0.54	-0.46
	Thought Problems	343	17.21	5.06	0.07	-0.24
	Attention Problems	343	11.47	2.48	-0.17	1.30
	Rule-Breaking Behavior	343	16.34	5.17	0.33	-0.27
	Aggressive Behavior	343	12.59	5.25	0.44	-0.26
	Total Behavioral Problems Score	343	99.30	19.89	-0.06	1.76
Amount of Digital Media Use	Total Digital Media Use Score	343	29.74	7.12	0.25	0.12
Parent-Child Interaction Quality	Conflict	343	48.59	9.01	0.18	-0.43
	Closeness	343	29.71	4.45	-0.15	-0.08
	Dependence	343	17.96	3.68	-0.17	0.24
	Total Parent-Child Interaction Quality Score	343	107.06	13.21	-0.21	-0.41
Emotion Regulation Strategies	Suppression Strategy	343	12.07	3.13	-0.16	0.05
	Reappraisal Strategy	343	23.06	7.29	0.45	-0.05
	Total Emotion Regulation Strategies Score	343	28.13	13.21	-0.21	-0.41

As can be observed in the content of Table (2), the highest mean belongs to the total score of parent-child interaction quality (107.06) and the lowest mean is related to the social problems subscale (3.82). To examine the normality of the data, the skewness and kurtosis test was used, the results of which for all variables except somatic complaints are between +1.96 and -1.96, indicating the normality of the data.

In this section of data analysis, using inferential statistics and structural equation modeling, the research hypotheses were tested. The criteria for selecting the appropriate statistical method for testing the hypotheses were based on the measurement level of the variables and the objective. Before conducting the hypothesis tests, to select the appropriate statistical test; the test assumptions were examined.

First Assumption: Examining the Assumption of Data Normality

To examine the normality of the data, the skewness and kurtosis test was used. The results for all variables, except for somatic complaints, were between +1.96 and -1.96, indicating the normality of the research data distribution.

Second Assumption: Correlation Matrix

Table 3

Test of Correlation Between Research Variables

Variable	Behavioral Problems	Amount of Digital Media Use	Parent-Child Interaction Quality	Suppression Strategy	Reappraisal Strategy
Behavioral Problems	1				
Amount of Digital Media Use	0.36	1			
Parent-Child Interaction Quality	-0.48	-0.73	1		
Suppression Strategy	0.47	0.57	-0.55	1	
Reappraisal Strategy	-0.46	-0.27	0.44	-0.44	1

(p < 0.05 p < 0.01)

The results in Table 3 show that there is a significant relationship between the amount of digital media use, parent-child interaction quality, and the emotion regulation strategies of suppression and reappraisal with students' behavioral problems. Furthermore, a significant relationship is observed between the amount of digital media use, parent-child interaction quality, and the emotion regulation strategies of suppression and reappraisal.

Third Assumption: Detecting Multicollinearity Between Predictor and Criterion Variables

Tolerance values and Variance Inflation Factor (VIF) values are used to indicate linear relationships between variables. The results show that the tolerance statistic for predictor variables is not less than 0.01, and the VIF value is not greater than 10, indicating linear relationships between the variables.

Fourth Assumption: Adherence to the Assumption of Independence of Observations

In the present research, a fundamental assumption of structural equation modeling, namely the independence of observations, was meticulously observed. Independence of observations means that the response or score of each participant in the sample is completely independent of the

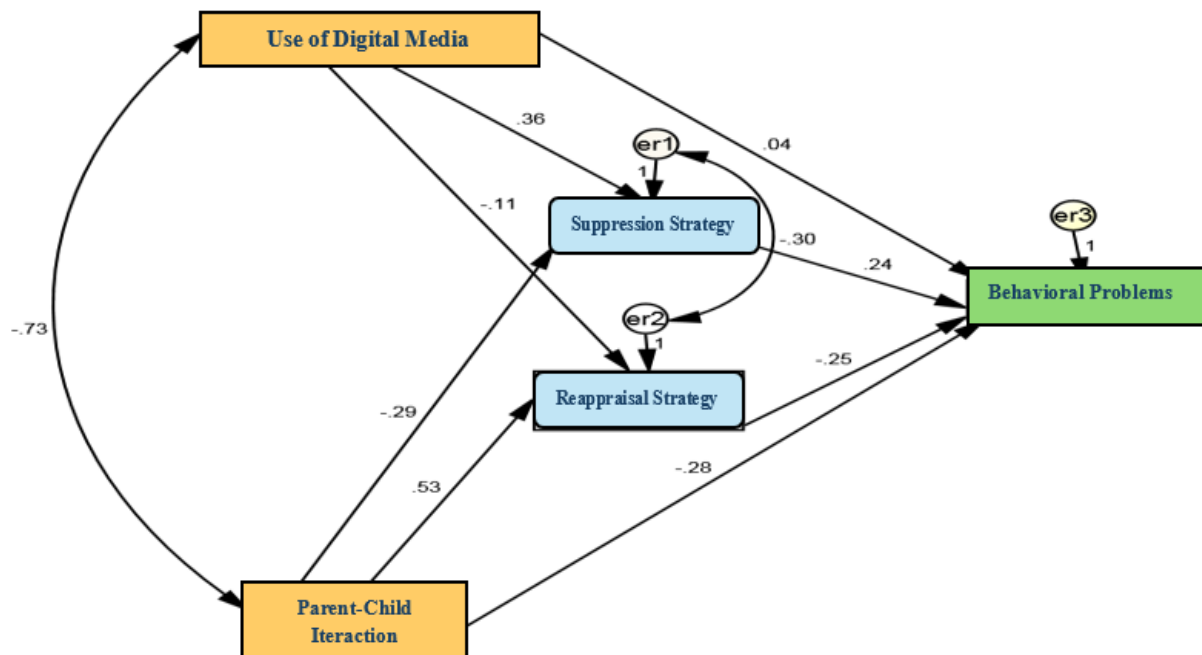
Given that the correlation matrix is the basis for analyzing causal models, particularly structural equation modeling, before examining the theoretical model, the correlation matrix of the research variables along with their correlation coefficients is presented in Table 3 to examine the relationships between the variables.

response or score of other participants, and there is no structural or hierarchical dependency among the data. To ensure this and prevent bias in statistical estimates and reduce the accuracy of standard errors, the sampling process was conducted using convenience and individual sampling. Thus, it was ensured that respondents answered the questionnaires separately and without mutual influence, and no natural grouping or mutual dependency that would violate this assumption (such as paired or clustered data) existed in the analysis.

To analyze the mediating role of emotion regulation strategies in the relationship between the amount of social media use and parent-child interaction quality with children's behavioral problems, structural equation modeling using path analysis and with the help of AMOS software was employed. In fact, to evaluate the mediating role of emotion regulation strategies, it is necessary to calculate the direct and indirect effects of the variable amount of social media use and parent-child interaction quality on children's behavioral problems. Therefore, after ensuring the normality of the dependent variables, all relationships between the variables were examined based on the research conceptual model.

Figure 1

Structural Equation Diagram Aligned with the Conceptual Model and the Relationships Between Variables



The statistical fit indices of the above model indicate that the chi-square to degrees of freedom ratio is equal to 0 (CMIN/df = 0), the Goodness of Fit Index (GFI) is equal to 1 (GFI = 1), the Normed Fit Index (NFI) is equal to 1 (NFI = 1), the Comparative Fit Index (CFI) is equal to 1 (CFI =

1), and the Incremental Fit Index (IFI) is also equal to 1 (IFI = 1); all of which indicate a very favorable fit of the depicted model.

Based on the illustrated diagram, the path analysis for direct effects yields the results presented in the table below.

Table 4

Path Coefficients for Direct Paths in the Proposed Research Model

Independent Component	Criterion Component	Coefficient (β)	T	Significance (p)
Amount of Digital Media Use	Behavioral Problems	0.04	0.65	0.514
Parent-Child Interaction Quality	Behavioral Problems	-0.28	-4.01	0.0001
Suppression Strategy	Behavioral Problems	0.24	4.18	0.0001
Reappraisal Strategy	Behavioral Problems	-0.25	-4.85	0.0001
Amount of Digital Media Use	Suppression Strategy	0.36	5.64	0.0001
Parent-Child Interaction Quality	Suppression Strategy	-0.29	-4.66	0.008
Amount of Digital Media Use	Reappraisal Strategy	-0.11	-1.55	0.119
Parent-Child Interaction Quality	Reappraisal Strategy	0.53	4.01	0.001

The findings presented in Table 4 indicate that the amount of digital media use does not have a direct effect on children's behavioral problems; however, parent-child interaction quality does have a direct effect on children's behavioral problems. Furthermore, the analysis results showed that parent-child interaction quality has a direct

effect on emotion regulation strategies; but the amount of social media use only has a direct effect on the suppression emotion regulation strategy, and the direct effect of this component on the reappraisal strategy was rejected.

The results of the bootstrap test for the mediation paths of the proposed model can be observed in Table 5.

Table 5

Results of the Bootstrap Test for the Mediation Paths of the Proposed Model

Paths	Standardized Coefficient	Lower Bound	Upper Bound	Significance Level (p)
Digital Media Use → Suppression Strategy → Behavioral Problems	0.08	0.07	0.19	0.004
Digital Media Use → Reappraisal Strategy → Behavioral Problems	0.03	-0.07	0.01	0.170
Parent-Child Interaction Quality → Suppression Strategy → Behavioral Problems	0.07	-0.16	-0.06	0.003
Parent-Child Interaction Quality → Reappraisal Strategy → Behavioral Problems	0.13	-0.24	-0.11	0.007

The findings of the bootstrap test indicate that parent-child interaction quality, with the mediating role of emotion regulation strategies, is capable of predicting children's behavioral problems. The results also showed that the amount of digital media use, with the mediating role of the suppression emotion regulation strategy, is capable of predicting children's behavioral problems; however, the amount of digital media use, with the mediating role of the emotion regulation strategy in the reappraisal component, is not capable of predicting children's behavioral problems.

4. Discussion

The present study aimed to predict behavioral problems among sixth-grade elementary students based on digital media use and parent-child interaction quality, with the mediating role of emotion regulation. The descriptive findings showed that the mean total score of behavioral problems was 99.30, indicating that behavioral symptoms were meaningfully present in the studied population. Among the behavioral problem components, thought problems, rule-breaking behavior, anxiety-depression, and aggressive behavior showed comparatively higher mean values, suggesting that both internalizing and externalizing dimensions should be considered in interpreting the behavioral profile of sixth-grade students. The mean score of digital media use was 29.74, indicating a moderate level of media engagement, while the mean total score of parent-child interaction quality was 107.06. In addition, the mean score of reappraisal was higher than suppression, suggesting that although adaptive emotion regulation strategies existed among students, maladaptive strategies such as suppression remained clinically and educationally important.

The correlation results showed that behavioral problems had a positive association with digital media use and suppression, and a negative association with parent-child interaction quality and reappraisal. These findings indicate that students who reported higher digital media use and greater reliance on emotional suppression tended to show more behavioral problems, while those with better parent-child interaction and greater use of reappraisal tended to show fewer behavioral problems. This pattern is consistent with previous studies showing that children's behavioral problems are associated with family adversity, parenting variables, emotional functioning, and the quality of parent-child relationships (Goulter et al., 2021; Khoshkardar et al., 2020; Masoumi Zavariani et al., 2024). The negative relationship between parent-child interaction quality and behavioral problems is also aligned with findings that closeness, emotional responsiveness, and constructive family communication reduce maladjustment, whereas conflictual and negative parent-child relationships increase children's behavioral and emotional difficulties (Driscoll & Pianta, 2011; Jimenez et al., 2019; Salamat et al., 2019).

The structural equation modeling results showed that digital media use did not have a significant direct effect on behavioral problems. This means that the amount of media use alone was not sufficient to directly predict behavioral problems when parent-child interaction and emotion regulation strategies were simultaneously included in the model. This finding is important because it suggests that the behavioral consequences of digital media should not be interpreted only through duration or frequency of use. Instead, digital media may become problematic when it is linked with weaker emotional control, avoidant coping, inadequate parental mediation, or poor family interaction.

This result is partially consistent with studies emphasizing that problematic or excessive digital media use, rather than simple exposure, is more strongly associated with children's mental health and behavioral problems (Li et al., 2022; Shutzman & Gershy, 2023). It is also compatible with findings indicating that the impact of digital devices depends on the type of use, parental supervision, and developmental context (Abhijit et al., 2025; Kaur et al., 2024; Soltani et al., 2019).

Although the direct path from digital media use to behavioral problems was not significant, digital media use significantly predicted suppression, and suppression significantly predicted behavioral problems. The bootstrap results confirmed that digital media use indirectly increased behavioral problems through the suppression strategy. This finding indicates a full mediating role of suppression in the relationship between digital media use and behavioral problems. In other words, digital media use may not necessarily produce behavioral problems directly; rather, it may increase the likelihood of behavioral problems when it is accompanied by a maladaptive emotional pattern in which students inhibit, hide, or suppress emotional expression. This result is theoretically meaningful because children may use media as a rapid emotional escape from boredom, anxiety, conflict, sadness, or frustration. When this avoidant pattern is repeated, children may become less practiced in expressing, understanding, and cognitively processing emotions, thereby relying more on suppression. The finding is consistent with the view that media use can operate as an emotion regulation and coping mechanism (Schramm & Cohen, 2018) and with evidence showing that dysregulated media use is associated with emotional and behavioral difficulties (Shutzman & Gershy, 2023).

The non-significant indirect path from digital media use to behavioral problems through reappraisal further clarifies the mechanism. Digital media use did not significantly predict reappraisal, and the indirect path through reappraisal was not confirmed. This suggests that media use in itself may be more strongly connected with maladaptive regulation, particularly suppression, than with adaptive cognitive reinterpretation. Reappraisal is a reflective and cognitively demanding process that requires the child to reinterpret the meaning of an emotional situation, whereas digital media may often provide immediate distraction or avoidance rather than reflective emotional processing. This distinction is consistent with Gross and John's model, in which reappraisal is considered an antecedent-focused and generally adaptive strategy, while suppression is a response-

focused strategy often associated with less favorable emotional and interpersonal outcomes (Gross & John, 2003). The finding is also supported by studies emphasizing the importance of valid measurement of cognitive and behavioral emotion regulation strategies and their different psychological consequences (Hasani, 2011; Sadat Rasul & Alizadeh Fard, 2021).

The results also showed that parent-child interaction quality had a significant negative direct effect on behavioral problems. This means that better parent-child interaction quality predicted lower behavioral problems among sixth-grade students. This finding confirms the protective function of the family relationship in children's behavioral adjustment. A positive parent-child relationship provides emotional security, clear communication, behavioral boundaries, support, and opportunities for children to learn self-control and interpersonal problem-solving. Conversely, conflict, low closeness, and unstable parental responses can intensify emotional insecurity and behavioral dysregulation. This finding is consistent with studies showing that parent-child interaction is central to children's socio-emotional development and that negative family relationships are associated with externalizing and internalizing problems (Driscoll & Pianta, 2011; Gallegos et al., 2023; Masoumi Zavariani et al., 2024). It is also aligned with evidence that parenting styles, parental stress, and family developmental functioning play important roles in predicting behavioral problems (Khoshkerdar et al., 2020; Moshirifar et al., 2023; Salamat et al., 2019).

The direct effect of parent-child interaction quality on suppression was negative, indicating that higher-quality parent-child interaction reduced children's reliance on emotional suppression. This finding suggests that when children experience greater closeness, acceptance, and constructive communication with parents, they may feel less need to hide or inhibit emotions. Emotionally responsive parents can help children name emotions, tolerate distress, discuss conflicts, and express needs in socially acceptable ways. As a result, children become less dependent on suppression as a defensive or avoidant strategy. This explanation is compatible with findings showing that parental self-compassion, parental emotional functioning, and family communication are associated with child adjustment (Cheung et al., 2022; Jimenez et al., 2019). It is also consistent with intervention studies showing that strengthening parenting skills and parent-centered approaches can improve children's emotional regulation and

reduce behavioral problems (Eisanejad et al., 2019; Lohrassbi et al., 2023; Nejatifar et al., 2020).

The direct effect of parent-child interaction quality on reappraisal was positive, showing that better interaction quality predicted greater use of cognitive reappraisal. This is one of the most important findings of the study because it indicates that the parent-child relationship does not merely reduce maladaptive emotional strategies; it also actively supports adaptive emotional development. In warm and responsive family relationships, children have more opportunities to talk about emotional events, reinterpret stressful experiences, understand alternative perspectives, and receive guidance in solving problems. These experiences create a relational foundation for reappraisal. The finding supports the idea that emotion regulation is learned in relational contexts and that parents play a major role in shaping the child's emotional habits. It also aligns with research connecting attachment, emotion regulation, resilience, and well-being (Bigdeli et al., 2013), as well as with studies emphasizing the developmental importance of parent-child closeness and family communication (Driscoll & Pianta, 2011; Jimenez et al., 2019).

The mediation analysis showed that parent-child interaction quality reduced behavioral problems through both suppression and reappraisal. Specifically, better parent-child interaction reduced suppression, which in turn reduced behavioral problems, and increased reappraisal, which also reduced behavioral problems. Therefore, emotion regulation partially mediated the relationship between parent-child interaction quality and behavioral problems. This finding means that parent-child interaction has both a direct protective role and an indirect protective role through emotion regulation. The direct effect may reflect general family support, discipline, supervision, and emotional security, while the indirect effect reflects the child's internalization of adaptive emotional strategies. This result supports the argument that behavioral problems should be understood not only as observable actions but also as outcomes of internal emotional processes shaped by the family environment (Gross & John, 2003; Masoumi Zavariani et al., 2024; Sadat Rasul & Alizadeh Fard, 2021).

Taken together, the findings suggest that emotion regulation is a central mechanism in explaining behavioral problems among sixth-grade students. Suppression increased behavioral problems, whereas reappraisal decreased them. This distinction is consistent with the theoretical literature on emotion regulation, which considers suppression a less adaptive strategy because it reduces

emotional expression without resolving emotional arousal or changing emotional meaning. Over time, suppression may increase irritability, interpersonal distance, internal tension, and behavioral outbursts. In contrast, reappraisal helps children reinterpret difficult situations and respond more flexibly, reducing the likelihood of aggression, withdrawal, anxiety, and rule-breaking behavior (Gross & John, 2003; Hasani, 2011; Sadat Rasul & Alizadeh Fard, 2021). Therefore, the results show that the same external risk factor may have different behavioral consequences depending on the child's emotion regulation style.

The findings also clarify the contemporary developmental role of digital media. The absence of a direct media-behavior path suggests that media use should not be treated as an isolated risk factor. However, the significant indirect path through suppression indicates that digital media can become developmentally risky when it contributes to avoidance-based emotional coping. This conclusion is consistent with research showing that children's digital media use is associated with behavioral problems, especially when use is excessive, poorly supervised, or psychologically dysregulated (Abhijit et al., 2025; Kaur et al., 2024; Shutzman & Gershy, 2023). It is also consistent with studies showing that parental media literacy and parental mediation are important in regulating children's electronic media use and reducing behavioral problems (Li et al., 2022; Soltani et al., 2019). Therefore, the results support a balanced interpretation: digital media is not inherently harmful, but its psychological function and regulatory context determine its developmental consequences.

The findings are also compatible with the broader literature on school adjustment and student engagement. Behavioral problems in sixth-grade students can reduce academic engagement, increase burnout, and weaken school adaptation. Conversely, children who experience supportive family relationships and possess effective emotion regulation skills are more likely to maintain engagement and cope with academic demands. This interpretation is aligned with recent evidence on primary school students showing that engagement and burnout are important indicators of student functioning (Yang et al., 2025). In addition, educational and culturally based interventions, such as positive parenting training and narrative or value-based educational programs, can improve children's adjustment and behavioral outcomes (Eisanejad et al., 2019; Roshani et al., 2022). Therefore, the present findings have implications not only for child mental health but also for school counseling and educational planning.

5. Conclusion

Overall, this study contributes to the literature by integrating digital media use, parent-child interaction quality, and emotion regulation into one predictive model of behavioral problems. The results show that parent-child interaction quality is a strong protective factor, digital media use operates mainly through suppression, and emotion regulation strategies differentiate risk from protection. These findings support a systemic interpretation of children's behavioral problems in which the family environment, digital environment, and internal emotional capacities interact with one another. The study therefore extends previous research that examined these variables separately and provides a more integrated explanation of behavioral problems among sixth-grade elementary students (Gross & John, 2003; Mahmoudian et al., 2015; Masoumi Zavariani et al., 2024; Schramm & Cohen, 2018).

The present study had several limitations. First, the research design was descriptive-correlational and based on structural equation modeling; therefore, although the proposed model was theoretically supported, causal conclusions should be made cautiously. Second, the data were collected through self-report and parent-report questionnaires, which may be affected by response bias, social desirability, or inaccurate perception of children's behaviors and media use. Third, the study was limited to sixth-grade elementary students in District 5 of Isfahan, which may restrict the generalizability of the findings to students in other grades, cities, cultural contexts, or socioeconomic groups. Fourth, the study measured the amount of digital media use but did not deeply differentiate between types of content, purposes of use, timing of use, educational versus entertainment media, or supervised versus unsupervised use.

Future studies are suggested to use longitudinal and experimental designs to clarify the causal sequence among digital media use, parent-child interaction, emotion regulation, and behavioral problems. It is also recommended that future research examine the moderating role of gender, socioeconomic status, academic performance, parental education, parenting style, sleep quality, peer relationships, and type of media content. In addition, future studies may benefit from using multi-informant and multi-method assessment, including teacher reports, clinical interviews, behavioral observation, digital tracking of media use, and standardized emotion regulation tasks. Researchers are also encouraged to compare normal school populations with

clinical or high-risk groups to determine whether the mediating role of emotion regulation differs across developmental and psychological conditions.

From a practical perspective, the findings suggest the need for integrated interventions that simultaneously address family relationships, media use patterns, and children's emotion regulation skills. Schools can provide parent training workshops focused on positive communication, emotional coaching, constructive discipline, and healthy media rules at home. Counselors and psychologists can teach students practical emotion regulation strategies such as identifying emotions, cognitive reappraisal, problem-solving, relaxation, and adaptive expression of anger or sadness. Parents should be encouraged to replace unregulated screen time with shared family activities, structured routines, conversation, reading, physical play, and supervised educational media use. Educational authorities can also develop age-appropriate media literacy and emotional skills programs for elementary students to prevent behavioral problems before they become stable developmental patterns.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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