

The Effectiveness of Mindfulness Training for Mothers on Parenting Stress and the Quality of the Parent–Child Relationship in Families with a Child with Autism

Farbod Amin. Anaraki^{1*}

1. Department of Assessment and Measurement (Psychometrics), CT.C., Islamic Azad University, Tehran, Iran

* Corresponding author email address: farbod.aminanaraki@iau.ir

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ABSTRACT

The present study aimed to determine the effectiveness of mindfulness training for mothers on parenting stress and the quality of the parent–child relationship in families with a child with autism. This was a quasi-experimental study with a pretest, posttest, and two-month follow-up design with a control group. The statistical population included mothers of children with autism spectrum disorder who referred to the Golha Autism Center in Chalus, Iran, during 2025–2026. Following the initial screening, eligible mothers completed the Autism Parenting Stress Index developed by Fetroswan and Miles and the Parent–Child Interaction Questionnaire developed by Lange et al. Subsequently, 30 participants were selected through purposive sampling and randomly assigned to an experimental group and a control group, with 15 participants in each group. The experimental group received mindfulness training based on Kabat-Zinn’s mindfulness-based stress reduction model in eight 90-minute sessions, while the control group received no intervention during this period. Data were analyzed using the independent samples t-test, Fisher’s exact test, and two-way repeated-measures analysis of variance in SPSS version 26. The results showed that there was no significant difference between the experimental and control groups in terms of demographic characteristics. In addition, the results of the two-way repeated-measures analysis of variance indicated that the interaction effect of group and time on parenting stress and the quality of the parent–child relationship was significant. Based on the comparison of means, parenting stress scores in the experimental group decreased from the pretest to the posttest, and this reduction remained largely stable at the two-month follow-up. Moreover, the scores for the quality of the parent–child relationship in the experimental group increased from the pretest to the posttest, and this improvement was relatively maintained at follow-up, whereas no considerable change was observed in the control group. Based on the study findings, mindfulness training for mothers can reduce parenting stress and improve the quality of the parent–child relationship in families with a child with autism.

Keywords: mindfulness training, parenting stress, quality of the parent–child relationship, autism.

1. Introduction

Autism spectrum disorder is a neurodevelopmental condition characterized by persistent difficulties in social communication and social interaction, along with restricted, repetitive patterns of behavior, interests, or activities. These characteristics appear across a wide range of severity levels and may be accompanied by sensory sensitivities, emotional dysregulation, language delays, intellectual or learning difficulties, sleep problems, feeding problems, and behavioral challenges. Because autism affects not only the child's individual developmental trajectory but also daily family routines, caregiving demands, educational planning, and emotional interactions within the family, it is increasingly understood as a condition with broad relational and systemic consequences. Families of children with autism are often required to coordinate multiple services, including diagnostic assessment, behavioral intervention, speech and language therapy, occupational therapy, educational support, and psychological counseling. These demands may place mothers, who are often the primary caregivers in many family systems, under continuous psychological, emotional, and practical pressure (Hodis et al., 2025).

Parenting a child with autism may differ from parenting typically developing children because parents are frequently exposed to persistent caregiving challenges that are not limited to ordinary developmental tasks. Difficulties in communication, unpredictable emotional reactions, repetitive behaviors, sensory sensitivities, sleep disturbances, feeding difficulties, and social adjustment problems can create repeated stressors in daily parent-child interactions. In addition, parents may experience uncertainty about the child's future, concerns about educational placement, pressure related to treatment costs, and social judgment in public settings. These conditions can increase parental burden and reduce parents' perceived competence, especially when the child's behaviors are interpreted as difficult to manage or when parents do not receive adequate social and professional support. Evidence from families of children with autism has shown that parental burden is associated with several family and child-related factors, indicating that the psychological impact of autism extends beyond the child and influences the well-being of the entire caregiving system (Picardi et al., 2018).

Among different dimensions of caregiver functioning, parenting stress is one of the most important psychological outcomes in families of children with autism. Parenting

stress refers to the psychological distress that emerges when perceived parenting demands exceed the parent's available coping resources. In mothers of children with autism, parenting stress may arise from behavioral management difficulties, communication barriers, worries about the child's independence, disruption of family routines, financial pressure, reduced personal time, and feelings of helplessness or guilt. High levels of parenting stress can negatively affect maternal mental health and may increase the likelihood of harsh, reactive, inconsistent, or emotionally withdrawn parenting responses. In this sense, parenting stress is not only an outcome of difficult caregiving conditions but may also become a mechanism through which family interactions deteriorate. Therefore, reducing parenting stress in mothers of children with autism is a clinically important goal that can support both maternal well-being and the child's relational environment (Weitlauf et al., 2020).

The quality of the parent-child relationship is another central construct in understanding family functioning in the context of autism. A positive parent-child relationship is characterized by emotional warmth, acceptance, responsiveness, mutual engagement, conflict resolution, and the parent's ability to recognize and respond sensitively to the child's needs. From a relational health perspective, parenting is not merely a set of disciplinary or caregiving behaviors but a dynamic interpersonal process that shapes the child's emotional security, social development, behavioral regulation, and psychological adjustment. In families of children with autism, the parent-child relationship may be affected by communication difficulties, the child's limited social reciprocity, behavioral inflexibility, and parental emotional exhaustion. However, supportive and responsive parent-child interactions can create a protective context for the child's development and can help parents experience greater emotional connection and meaning in caregiving (Frosch et al., 2019).

Recent research has emphasized that the quality of the parent-child relationship in the context of autism is closely linked to parental psychological adjustment. Parents who experience greater stress, unresolved emotional reactions to the child's diagnosis, and heavier caregiving burden may have more difficulty maintaining a sensitive and emotionally available relationship with the child. Conversely, parents who develop acceptance, emotional regulation, and adaptive coping strategies may be better able to respond to the child's needs without becoming overwhelmed by frustration or anxiety. The parent-child relationship is therefore

influenced not only by the child's developmental characteristics but also by the parent's internal emotional processes and capacity to remain present, regulated, and responsive during challenging interactions. This view highlights the importance of parent-focused interventions that directly target parental stress and relational functioning rather than focusing exclusively on child symptoms (Levante et al., 2025).

Mindfulness has emerged as one of the promising psychological approaches for improving parental adjustment and parent-child interaction. Mindfulness generally refers to purposeful, present-moment, and nonjudgmental awareness of internal and external experiences. In parenting contexts, mindfulness involves paying attention to the child and to one's own reactions with openness, acceptance, and reduced automatic judgment. Mindful parenting can help parents observe their thoughts, emotions, bodily tension, and behavioral impulses before responding to the child. This process may reduce reactive parenting, increase emotional awareness, promote acceptance of difficult experiences, and strengthen compassionate responses toward both the self and the child. For mothers of children with autism, mindfulness may be particularly relevant because many daily caregiving situations involve emotional triggers, uncertainty, frustration, and repeated demands that require self-regulation and patience.

The theoretical basis of mindfulness-based interventions suggests that these programs reduce stress by changing the parent's relationship with stressful thoughts and emotions. Instead of attempting to suppress distressing experiences or react automatically to them, parents learn to observe them as temporary mental and bodily events. This skill can be especially helpful when mothers face behaviors such as crying, repetitive movements, resistance to change, sleep problems, or public behavioral outbursts. Through practices such as mindful breathing, body scanning, nonjudgmental observation of thoughts, acceptance of emotions, and self-compassion, mothers may learn to pause before reacting, identify their emotional states, and choose more constructive responses. In this way, mindfulness training may reduce parenting stress while simultaneously improving the emotional climate of the parent-child relationship.

Empirical studies support the potential value of mindfulness-based approaches for parents of children with developmental difficulties and autism. Mindfulness-based stress reduction has been shown to have beneficial implications for the mental health of parents of young children with developmental delays and for children's

behavioral problems, suggesting that interventions focused on parental awareness and stress regulation can influence both parent and child outcomes (Neece, 2014). In the field of autism, mindfulness-based programs designed for children with autism and their parents have demonstrated direct and long-term improvements, indicating that mindfulness can be useful not only as a stress-management strategy but also as a family-centered intervention with sustained benefits (Ridderinkhof et al., 2018). These findings provide a strong rationale for applying mindfulness training in families who experience chronic caregiving stress related to autism.

More recent evidence has further strengthened the empirical foundation of mindfulness-based interventions for children with autism and their parents. A systematic review and meta-analysis indicated that mindfulness-based interventions can be effective for this population, supporting their role in improving psychological and behavioral outcomes in autism-related contexts (Peng et al., 2025). Such evidence is important because families of children with autism often require interventions that are feasible, nonpharmacological, adaptable, and compatible with ongoing educational and rehabilitation services. Mindfulness training can be delivered in group formats, integrated into family counseling or rehabilitation programs, and adapted to the daily experiences of parents. Therefore, it may represent a practical intervention for autism centers and psychological clinics seeking to support mothers who experience high parenting stress and relational difficulties.

Randomized controlled evidence has also indicated that mindfulness-based stress reduction can be helpful for parents implementing early intervention for autism. Parents who participate in mindfulness-based stress reduction may become more capable of managing the emotional demands associated with their child's intervention process, which often requires persistence, patience, and repeated behavioral practice in daily life (Weitlauf et al., 2020). This is particularly relevant because early and ongoing interventions for autism frequently depend on parental involvement. If parents are emotionally exhausted or highly reactive, their ability to support the child's intervention goals may be weakened. Conversely, when parents are calmer, more aware, and more accepting, they may be more consistent and responsive in their interactions with the child.

Mindfulness is also related to child behavioral outcomes through parental psychological and behavioral mechanisms. Research on parental mindfulness and preschool child behavior problems suggests that mindful parenting may

influence child behavior through mediated pathways, including changes in parenting processes and parent–child interaction patterns (Quan et al., 2023). Although children with autism have specific neurodevelopmental characteristics, the broader implication is that parents' capacity for mindful awareness may shape how they interpret and respond to the child's behavior. A mother who can observe her own emotional arousal without immediately reacting may be less likely to respond with anger, avoidance, or criticism. Instead, she may be more likely to respond with patience, structure, and emotional availability, all of which can contribute to a more positive parent–child relationship.

Studies conducted in family and clinical contexts have similarly shown that mindful parenting training can reduce parental stress among mothers of children with autism spectrum disorders (Ghanavati et al., 2020). This finding is consistent with the assumption that mindfulness helps parents move from automatic, stress-driven reactions toward more deliberate and regulated responses. In addition, mindfulness parenting training has been compared with parent management training and combined approaches in relation to coping strategies and marital satisfaction, suggesting that mindfulness-based parenting interventions can influence broader family functioning and parental adjustment (Hosseini Yazdi et al., 2023). These findings are especially important because mothers of children with autism may experience stress not only in direct caregiving but also in marital, familial, and social domains. Therefore, improving maternal mindfulness may have effects beyond immediate stress reduction and may support more adaptive coping within the family system.

Despite growing evidence regarding the benefits of mindfulness-based interventions, further research remains necessary for several reasons. First, many existing studies have focused primarily on parental stress or general parental mental health, while fewer have simultaneously examined both parenting stress and the quality of the parent–child relationship as outcome variables. Second, the effectiveness of mindfulness training may vary depending on cultural, clinical, and service-delivery contexts, making it important to examine such interventions in local autism centers and community-based settings. Third, the inclusion of follow-up assessment is necessary to determine whether the effects of mindfulness training persist after the end of the sessions. Because parenting a child with autism involves continuous and recurring stressors, it is not sufficient to evaluate only immediate post-intervention changes; rather, the relative stability of outcomes should also be assessed.

In this regard, mothers of children with autism represent an especially important target group for intervention. They often bear a substantial share of daily caregiving responsibilities, including managing behavioral difficulties, coordinating therapy and education, responding to emotional needs, and maintaining family routines. Persistent parenting stress can reduce the mother's psychological resources and may interfere with sensitive and responsive interaction with the child. Mindfulness training may help mothers become more aware of stress signals, reduce emotional reactivity, accept difficult experiences without excessive self-blame, and remain more present in interactions with their child. Such changes may reduce parenting stress and improve the quality of the parent–child relationship by strengthening acceptance, patience, emotional regulation, and mindful responsiveness.

Given the theoretical importance of parenting stress and parent–child relationship quality in families of children with autism, as well as the growing evidence for mindfulness-based interventions, the present study was designed to examine whether mindfulness training for mothers can produce meaningful improvements in these two domains. The use of a quasi-experimental pretest, posttest, and two-month follow-up design with a control group makes it possible to evaluate both immediate and relatively sustained changes following the intervention. By focusing on mothers of children with autism who showed higher parenting stress and lower parent–child relationship quality at the screening stage, the study addresses a clinically relevant group that may particularly benefit from structured mindfulness training.

The aim of the present study was to determine the effectiveness of mindfulness training for mothers on parenting stress and the quality of the parent–child relationship in families with a child with autism.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of its objective and quasi-experimental in terms of its implementation method, using a pretest, posttest, and two-month follow-up design with a control group. The statistical population consisted of all mothers of children with autism spectrum disorder who referred to the Golha Autism Center in Chalus, Iran, during 2025–2026. To select the sample, after obtaining the required permissions and coordinating with the officials of the Golha Autism Center, mothers of children

with autism whose children had an active educational, rehabilitation, or therapeutic file at the center were screened according to the study inclusion criteria. Eligible mothers then completed the Autism Parenting Stress Index and the Parent–Child Interaction Questionnaire. In the present study, the mean score of the initial sample on the Autism Parenting Stress Index was 86.40, and the mean score of the initial sample on the Parent–Child Interaction Questionnaire was 61.30. Therefore, mothers who obtained scores above the initial sample mean on the Autism Parenting Stress Index and scores below the initial sample mean on the Parent–Child Interaction Questionnaire were considered eligible to enter the intervention phase.

Following the initial screening, 30 eligible mothers were selected through purposive sampling and were then randomly assigned, using a simple lottery method, to an experimental group and a control group, with 15 participants in each group. The sample size was determined according to the quasi-experimental nature of the study, a 95% confidence level, a moderate effect size, and a statistical power of 0.83. Accordingly, the minimum required sample size was estimated to be 12 participants per group; however, considering the possibility of participant attrition during the intervention process, 15 participants were assigned to each group, resulting in a final sample of 30 participants. The inclusion criteria were being the mother of a child with autism spectrum disorder, having an active file for the child at the Golha Autism Center in Chalus during 2025–2026, having at least basic literacy skills to complete the questionnaires, obtaining a high score in parenting stress and a low score in the quality of the parent–child relationship at the screening stage, providing informed consent to participate in the study, being able to attend the training sessions regularly, and not participating simultaneously in a similar psychological intervention. The exclusion criteria included absence from more than two sessions, the mother’s withdrawal from continued cooperation, incomplete completion of the questionnaires, receiving a similar psychological intervention concurrently, the occurrence of a severe family or psychological crisis during the implementation of the study, and lack of cooperation in performing mindfulness exercises and assignments.

2.2. Measures

The Autism Parenting Stress Index developed by Fetroswan and Miles (2009) was used to assess parenting stress among mothers of children with autism. This scale

consists of 28 items and measures stressful experiences across four subscales. The first subscale, behaviors and communication, assesses stress related to managing the child’s behaviors in public settings, helping the child learn how to be with others, and supporting effective communication. The second subscale, parental caregiving stress, addresses difficulties related to the child’s unwillingness to be touched, eating problems, sleep problems, bathing, and dressing. The third subscale, advocacy for the child’s needs, includes items concerning the stress of communicating with schools and healthcare professionals about the child’s special needs. The fourth subscale, personal and family life, assesses stress related to financial problems, siblings, and finding time for personal activities. Each item is rated on a five-point Likert scale ranging from 1, indicating not stressful, to 5, indicating very stressful. Total scores range from 0 to 140, with higher scores indicating higher levels of parenting stress. The content and face validity of the scale were examined and confirmed through consultation with parents and specialists, and its factor structure was supported through factor analysis (Fetroswan & Miles, 2009). In the study by Karimi et al. (2023–2024), Cronbach’s alpha for the total Autism Parenting Stress Index was reported as 0.953, and the Cronbach’s alpha coefficients for the four components of child behaviors and communication, caregiving stress, advocacy for the child’s needs, and personal and family life ranged from 0.76 to 0.92. Composite reliability coefficients were also reported as 0.962 for the total scale and ranged from 0.86 to 0.93 for the subscales. The face and content validity of the scale were also confirmed based on the opinions of parents and experts.

The Parent–Child Interaction Questionnaire developed by Lange et al. (2002) was used to assess the quality of the parent–child relationship. This questionnaire was designed to help professionals and researchers evaluate how parents perceive their relationship with their children in the parent version of the PACHIQ and how children evaluate their relationship with their parents in the child version. The items of this questionnaire are related to interpersonal behaviors and emotions. The child form for each parent includes 25 items, and the parent form for each child includes 21 items. The child form includes two subscales: conflict resolution, consisting of items 1 to 17, and acceptance, consisting of items 18 to 25. This form is scored on a five-point Likert scale, with responses scored as 1 for never, 2 for rarely, 3 for sometimes, 4 for most of the time, and 5 for always. Items 1, 2, 3, 4, 5, 7, 10, 12, 13, 15, and 22 are reverse scored. The

parent form also includes two subscales: conflict resolution, consisting of items 1 to 12, and acceptance, consisting of items 13 to 21. This form is scored using the same five-point Likert scale, and items 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 18, 19, and 21 are reverse scored. The scores of mothers and fathers are calculated separately, and higher scores indicate a more positive parent–child relationship. In the study by Lange et al. (2002), the reliability of the questionnaire was assessed using Cronbach’s alpha. For the conflict resolution subscale, alpha coefficients were reported as 0.90 for mothers and 0.93 for fathers, and for the acceptance subscale, alpha coefficients were reported as 0.79 for mothers and 0.81 for fathers. For children’s attitudes toward their parents, Cronbach’s alpha coefficients were reported as 0.95 for conflict resolution with fathers, 0.93 for conflict resolution with mothers, 0.78 for acceptance of mothers, and 0.80 for acceptance of fathers. The total alpha coefficient was reported as 0.86 for mothers, 0.93 for fathers, 0.93 for children’s attitudes toward mothers, and 0.95 for children’s attitudes toward fathers. The original study also reported high correlations among factor scores in the father, mother, and child forms, and the findings confirmed a two-factor structure in all three forms. In the study by Isanejad et al. (2017–2018), Cronbach’s alpha coefficients for child–mother problem solving and child–mother acceptance were reported as 0.95 and 0.94, respectively, and those for child–father problem solving and child–father acceptance were reported as 0.94 and 0.97, respectively. In the father’s evaluation of the child, alpha coefficients for problem solving and acceptance were 0.89 and 0.91, respectively, and in the mother’s evaluation of the child, alpha coefficients for problem solving and acceptance were both reported as 0.96.

2.3. *Intervention*

The implementation procedure was as follows. After coordination with the Golha Autism Center in Chalus and identification of eligible mothers, the purpose of the study, implementation stages, duration of the sessions, method of completing the questionnaires, confidentiality of information, and the participants’ right to withdraw from the study were explained to the mothers. Informed consent was then obtained, and the pretest phase was administered to both groups. At this stage, mothers completed the Autism Parenting Stress Index and the Parent–Child Interaction Questionnaire. After the pretest, the experimental group received mindfulness training in eight 90-minute sessions, held once a week. During this period, the control group

received no psychological or educational intervention and participated only in the pretest, posttest, and follow-up assessment stages. After the completion of the training sessions, the posttest was administered to both groups, and the follow-up assessment was conducted two months after the end of the intervention.

The content of the mindfulness training sessions was developed based on Kabat-Zinn’s mindfulness-based stress reduction model (Kabat-Zinn, 1990). This model emphasizes conscious and nonjudgmental attention to present-moment experience, awareness of breathing, body scanning, observation of thoughts and emotions without becoming entangled in them, acceptance of difficult experiences, reduction of emotional reactivity, and the application of mindfulness in daily activities. In the present study, this program was simplified and implemented in eight 90-minute sessions according to the needs and conditions of mothers of children with autism. The main focus of the sessions was to reduce parenting stress, enhance maternal emotion regulation, reduce impulsive reactions to the child’s difficult behaviors, increase acceptance, and improve the quality of the parent–child relationship.

The first session focused on introduction, establishment of group rapport, and presentation of the concept of mindfulness. Group members were introduced to one another, the objectives and rules of the sessions were explained, confidentiality was emphasized, and a safe and supportive group atmosphere was established. Mindfulness was introduced as conscious and nonjudgmental attention to the present moment. The role of parenting stress in mothers’ emotional reactions and in the quality of the parent–child relationship was also explained. The assignment for this session was to record one stressful parenting situation and the mother’s reaction to the child’s behavior.

The second session focused on awareness of breathing and mindful pausing in parenting situations. Mothers were taught mindful breathing and practiced focusing attention on inhalation and exhalation. They learned to pause for a few moments and return their attention to their breathing before reacting immediately when facing difficult child behaviors, such as restlessness, crying, repetitive behaviors, or noncompliance. The purpose of this session was to reduce impulsive reactions and increase mindful responsiveness. The assignment was daily mindful breathing practice for 5 to 10 minutes.

The third session focused on body scanning and recognition of the physical signs of stress. Mothers were taught body scan exercises and were encouraged to attend to

physical signs of stress, such as muscle tension, palpitations, headache, chest pressure, and bodily tension. They examined how parenting stress manifests in their bodies and how it can influence their way of responding to the child. The purpose of this session was to increase body awareness and reduce physical tension in caregiving situations.

The fourth session focused on observing parental thoughts and judgments. Mothers were taught to observe thoughts without judgment and without becoming involved with them. They learned to view thoughts such as “I am not a good mother,” “My child’s future will be ruined,” “No one understands me,” or “I can no longer continue” as mental events rather than definite realities. The aim of this session was to reduce self-blame, excessive worry, and judgment toward oneself and the child.

The fifth session focused on acceptance of emotions and reduction of emotional reactivity. Mothers were trained to accept emotions such as anger, anxiety, sadness, fatigue, shame, and helplessness. In this session, it was emphasized that acceptance does not mean surrender or indifference; rather, it means seeing the reality of the present moment without struggling against it. Mothers practiced first naming their emotions when intense emotions were activated and then providing a more appropriate response to the child.

The sixth session focused on mindfulness in the parent–child relationship. The emphasis of this session was on mindful presence during interaction with the child. Mothers learned to be more fully attentive and less judgmental when playing with, feeding, talking to, caring for, or teaching the child. They were also taught to interpret the child’s behaviors less as intentional or disturbing and to pay greater attention to the child’s behavioral, emotional, and sensory messages. The assignment was to perform one short mindful interaction with the child each day.

The seventh session focused on self-compassion and self-care among mothers. Mothers of children with autism often experience considerable pressure and may blame themselves for their child’s difficulties. Therefore, this session emphasized kindness toward oneself, reduction of self-criticism, acceptance of human limitations, attention to the mother’s personal needs, brief rest, self-care, and compassionate inner dialogue. The purpose of this session was to reduce burnout and increase the mother’s psychological capacity for more effective communication with the child.

The eighth session focused on summarization, maintenance planning, and relapse prevention. The learned

skills, including mindful breathing, body scanning, observation of thoughts, acceptance of emotions, pausing before reacting, mindful interaction with the child, and self-care, were reviewed. Mothers identified high-risk situations, such as the child’s emotional outbursts, sleep problems, eating difficulties, repetitive behaviors, others’ judgments, or treatment-related pressures, and developed a mindful plan for coping with them. At the end of the session, the posttest was administered, and recommendations were provided for continuing mindfulness practices.

2.4. Data Analysis

Data were analyzed using SPSS version 26. In the descriptive statistics section, mean, standard deviation, frequency, and percentage were reported. To examine the homogeneity of the groups in terms of demographic variables, the independent samples t-test and Fisher’s exact test were used. Before conducting the main analysis, statistical assumptions were examined, including normality of data distribution using the Kolmogorov–Smirnov test, homogeneity of variances using Levene’s test, and the sphericity assumption using Mauchly’s test. Finally, to examine the effectiveness of mindfulness training for mothers on parenting stress and the quality of the parent–child relationship in families with a child with autism, two-way repeated-measures analysis of variance was used. The significance level for all statistical tests was set at 0.05.

3. Findings and Results

The mean and standard deviation of mothers’ age in the experimental and control groups were 36.20 ± 4.81 and 35.73 ± 4.56 years, respectively. The mean and standard deviation of the age of children with autism were 7.46 ± 1.84 years in the experimental group and 7.20 ± 1.69 years in the control group. The results of the independent samples t-test showed no statistically significant difference between the two groups in terms of mothers’ age and children’s age ($p > .05$). In addition, the results of Fisher’s exact test for mothers’ educational level, employment status, marital status, and severity of the child’s autism symptoms indicated no statistically significant differences between the experimental and control groups in demographic characteristics ($p > .05$). Therefore, the two groups were homogeneous in terms of demographic characteristics.

Table 1

Descriptive Statistics for Parenting Stress and Quality of the Parent–Child Relationship in the Experimental and Control Groups

Variable	Group	Pretest Mean ± SD	Posttest Mean ± SD	Follow-up Mean ± SD	Minimum	Maximum
Parenting stress	Experimental	94.26 ± 8.41	68.13 ± 7.62	70.06 ± 7.88	57	108
Parenting stress	Control	93.40 ± 8.28	92.53 ± 8.15	93.06 ± 8.34	76	109
Quality of the parent–child relationship	Experimental	56.73 ± 6.84	76.40 ± 7.18	74.86 ± 7.02	45	88
Quality of the parent–child relationship	Control	57.20 ± 6.56	58.06 ± 6.48	57.66 ± 6.61	46	86

As shown in Table 1, the mean scores of parenting stress in the experimental group decreased from the pretest to the posttest, and this reduction was largely maintained at the follow-up stage. In contrast, the control group showed no considerable change in parenting stress across the three measurement stages. Furthermore, the mean scores for the quality of the parent–child relationship in the experimental group increased from the pretest to the posttest, and this improvement remained relatively stable at follow-up. However, the control group showed only minimal changes in the quality of the parent–child relationship over time. Overall, the descriptive pattern of the results suggests that mindfulness training reduced parenting stress and improved the quality of the parent–child relationship among mothers of children with autism.

Before conducting the main analysis, the statistical assumptions for two-way repeated-measures analysis of variance were examined. The results of the Kolmogorov–Smirnov test showed that the distribution of scores for the study variables at the pretest, posttest, and follow-up stages did not significantly deviate from normality ($p > .05$). The results of Levene’s test also confirmed the homogeneity of variances for the study variables ($p > .05$). In addition, the results of Mauchly’s test indicated that the assumption of sphericity was met for parenting stress and the quality of the parent–child relationship. Therefore, the within-subjects effects were reported based on the sphericity-assumed results.

Table 2

Results of Two-Way Repeated-Measures Analysis of Variance for the Effects of Mindfulness Training on Parenting Stress and Quality of the Parent–Child Relationship

Variable	Source of Variation	Sum of Squares	df	Mean Square	F	p	η^2
Parenting stress	Group	3186.42	1	3186.42	19.34	< .001	.408
Parenting stress	Time	4024.56	2	2012.28	38.71	< .001	.581
Parenting stress	Group × Time	4024.56	2	2012.28	38.71	< .001	.555
Quality of the parent–child relationship	Group	2462.74	1	2462.74	18.06	< .001	.392
Quality of the parent–child relationship	Time	3128.46	2	1564.23	36.48	< .001	.566
Quality of the parent–child relationship	Group × Time	2864.28	2	1432.14	33.81	< .001	.547

As presented in Table 2, the main effect of group on parenting stress was statistically significant, indicating a significant difference between the experimental and control groups in mean parenting stress scores. The main effect of time was also significant, showing that parenting stress scores changed significantly across the pretest, posttest, and follow-up stages. More importantly, the interaction effect of group and time on parenting stress was significant, $F(2) = 38.71, p < .001, \eta^2 = .555$. This finding indicates that the pattern of change in parenting stress differed significantly

between the experimental and control groups. Considering the descriptive means, mindfulness training led to a significant reduction in parenting stress in the experimental group, whereas the control group showed no meaningful change.

The results also showed that the main effect of group on the quality of the parent–child relationship was statistically significant, indicating a significant difference between the experimental and control groups in mean scores for this variable. The main effect of time was also significant,

suggesting that the quality of the parent–child relationship changed significantly across the three measurement stages. In addition, the interaction effect of group and time was significant, $F(2) = 33.81$, $p < .001$, $\eta^2 = .547$. This result demonstrates that the trend of change in the quality of the parent–child relationship differed significantly between the two groups. Based on the increase in the experimental group’s mean scores from pretest to posttest and the relative maintenance of these scores at follow-up, it can be concluded that mindfulness training significantly improved the quality of the parent–child relationship among mothers of children with autism.

Overall, the findings showed that mindfulness training, compared with the control condition, significantly reduced parenting stress and significantly increased the quality of the parent–child relationship in mothers of children with autism. The relative stability of scores at the two-month follow-up further indicates that the effects of the intervention were largely maintained after the completion of the training sessions. Therefore, the study hypothesis regarding the effectiveness of mindfulness training for mothers on parenting stress and the quality of the parent–child relationship in families with a child with autism was supported.

4. Discussion

The present study aimed to determine the effectiveness of mindfulness training for mothers on parenting stress and the quality of the parent–child relationship in families with a child with autism. The findings showed that mindfulness training led to a significant reduction in parenting stress among mothers in the experimental group compared with the control group. The descriptive results indicated that parenting stress decreased from the pretest to the posttest in the experimental group, and this reduction was largely maintained at the two-month follow-up. In contrast, the control group showed no meaningful change across the three measurement stages. The results of the repeated-measures analysis of variance also confirmed significant main effects of group and time, as well as a significant group \times time interaction for parenting stress. Therefore, the observed reduction in parenting stress can be attributed to the mindfulness training program rather than to the passage of time or repeated measurement.

This finding is consistent with previous research indicating that parents of children with autism experience high levels of caregiving pressure, emotional strain, and

psychological burden due to the complex and persistent nature of autism-related difficulties (Hodis et al., 2025; Picardi et al., 2018). Children with autism spectrum disorder often display difficulties in social communication, sensory processing, behavioral flexibility, emotional regulation, and adaptive functioning, and these difficulties can create recurrent stressors in everyday parenting situations (Hodis et al., 2025). Mothers may need to manage repetitive behaviors, emotional outbursts, feeding problems, sleep disturbances, educational demands, and public reactions to the child’s behavior. These repeated demands can gradually increase emotional exhaustion and reduce the mother’s perceived ability to cope. From this perspective, the reduction of parenting stress after mindfulness training is theoretically meaningful, because mindfulness directly targets the mother’s emotional and cognitive responses to stressful experiences rather than attempting to remove all external stressors.

The effectiveness of mindfulness training in reducing parenting stress can be explained through several psychological mechanisms. Mindfulness teaches parents to attend to the present moment with awareness, openness, and nonjudgmental acceptance. Through practices such as mindful breathing, body scanning, observing thoughts, naming emotions, and pausing before reaction, mothers learn to recognize stress responses before they become automatic behavioral reactions. In the context of autism, this skill is especially important because many child behaviors may trigger immediate frustration, worry, shame, or helplessness in parents. When mothers learn to observe these internal reactions without becoming overwhelmed by them, they may be better able to respond calmly and constructively to the child. This explanation is supported by research showing that mindfulness-based stress reduction improves parental mental health and reduces stress among parents of children with developmental delays and autism-related needs (Neece, 2014; Weitlauf et al., 2020).

The present finding is also aligned with evidence from studies specifically focused on parents of children with autism. Ghanavati et al. reported that mindful parenting training reduced parental stress among mothers of children with autism spectrum disorders, which is consistent with the reduction of parenting stress observed in the present study (Ghanavati et al., 2020). Similarly, Weitlauf et al. found that mindfulness-based stress reduction was effective for parents implementing early intervention for autism, suggesting that mindfulness can support parents who are actively involved in their child’s therapeutic and developmental process

(Weitlauf et al., 2020). In addition, the systematic review and meta-analysis by Peng et al. indicated that mindfulness-based interventions are effective for children with autism and their parents, providing broader empirical support for the usefulness of mindfulness-based approaches in autism-related family contexts (Peng et al., 2025). The consistency between the present findings and these studies strengthens the conclusion that mindfulness training can be considered a beneficial intervention for reducing parenting stress in mothers of children with autism.

Another important result of the present study was that mindfulness training significantly improved the quality of the parent–child relationship in the experimental group. The descriptive results showed that the mean score of parent–child relationship quality increased from the pretest to the posttest in the experimental group and remained relatively stable at the follow-up stage. In contrast, the control group showed no considerable change in this variable. The analysis of variance also showed significant main effects of group and time and a significant group \times time interaction for the quality of the parent–child relationship. These findings indicate that mindfulness training not only reduced maternal stress but also improved the relational quality between mothers and their children with autism.

This result can be understood within a relational health framework, according to which child development and parental functioning are shaped through ongoing, reciprocal, and emotionally meaningful interactions between parent and child (Frosch et al., 2019). A positive parent–child relationship requires emotional availability, acceptance, warmth, responsiveness, and the ability to manage conflict without excessive criticism or withdrawal. In families of children with autism, communication barriers and behavioral challenges may make these relational processes more difficult. Mothers may misinterpret the child’s behaviors as deliberate noncompliance, rejection, or stubbornness, whereas many of these behaviors may reflect sensory overload, communication limitations, anxiety, or difficulty with transitions. Mindfulness training may help mothers observe the child’s behavior with less judgment and greater curiosity, thereby improving their ability to respond to the child’s underlying emotional and sensory needs.

The improvement in parent–child relationship quality is also consistent with the findings of Levante et al., who emphasized that the quality of the parent–child relationship in the context of autism is associated with parental resolution of the child’s diagnosis, parenting stress, and caregiving burden (Levante et al., 2025). When mothers experience

high stress and unresolved distress, they may have difficulty maintaining emotional presence and sensitive responsiveness. Conversely, when mothers become more accepting and emotionally regulated, they may be better able to create a warm and supportive relational environment. The present results suggest that mindfulness training may improve the mother–child relationship partly by reducing stress and partly by strengthening maternal acceptance, emotional awareness, and reflective responding. Thus, the intervention appears to influence not only intrapersonal outcomes, such as stress reduction, but also interpersonal outcomes, such as the quality of interaction with the child.

The findings are further supported by research on parental mindfulness and child behavior. Quan et al. showed that parental mindfulness can influence preschool children’s behavior problems through mediated psychological and parenting pathways (Quan et al., 2023). Although the present study did not directly assess child behavior problems as an outcome, the improvement in parent–child relationship quality may be interpreted in light of this mechanism. When parents become more mindful, they may become less reactive, less punitive, and more emotionally attuned. These changes can modify the interpersonal context in which child behaviors occur. In mothers of children with autism, mindful awareness may help reduce escalation cycles in which the child’s difficult behavior triggers maternal distress, which then leads to reactive responses that further intensify the child’s dysregulation. By interrupting this cycle, mindfulness may contribute to more stable, positive, and supportive parent–child interactions.

The results of the present study also correspond with previous evidence showing that mindfulness-based programs can produce direct and long-term improvements for children with autism and their parents (Ridderinkhof et al., 2018). The maintenance of intervention effects at the two-month follow-up in the present study is particularly important because parenting stress in families of children with autism is usually chronic and recurrent. A short-term reduction immediately after intervention may not be sufficient unless the learned skills can be applied in daily life after the sessions end. The relative stability of reduced parenting stress and improved parent–child relationship quality at follow-up suggests that mothers were able to continue using mindfulness skills such as mindful breathing, body awareness, emotional acceptance, self-compassion, and mindful interaction with the child beyond the formal training sessions.

The effectiveness of the intervention may also be explained by the compatibility between mindfulness skills and the specific caregiving needs of mothers of children with autism. Mothers in this context often face situations that require patience, tolerance of uncertainty, behavioral flexibility, and the capacity to respond rather than react. Mindfulness training directly strengthens these capacities. For example, mindful breathing can create a brief psychological space between the child's behavior and the mother's response. Body scanning can help the mother identify physical signs of stress before they lead to emotional outbursts. Observing thoughts can reduce self-blame and catastrophic interpretations, such as beliefs that the mother is failing or that the child's future is hopeless. Acceptance of emotions can help mothers experience sadness, anger, guilt, or fatigue without being controlled by these emotions. Self-compassion can reduce harsh self-criticism and increase the mother's psychological resources for caregiving.

The present findings are also consistent with research comparing mindfulness parenting training, parent management training, and combined training approaches. Hosseini Yazdi et al. found that mindfulness parenting training and parent management training can affect coping strategies and marital satisfaction, indicating that parent-focused psychological education can influence broader dimensions of family adjustment (Hosseini Yazdi et al., 2023). In the present study, the intervention did not directly target marital satisfaction or general coping strategies, but the reduction in parenting stress and improvement in parent-child relationship quality suggest that mindfulness training may strengthen adaptive coping within the maternal role. Because parenting stress often spreads into marital, familial, and social domains, interventions that improve maternal self-regulation may have wider benefits for family functioning.

5. Conclusion

Taken together, the results support the view that mindfulness training is a useful psychological intervention for mothers of children with autism. The significant reduction in parenting stress and the significant improvement in parent-child relationship quality indicate that mindfulness can address both emotional and relational difficulties in these families. These findings are important because many interventions for autism focus primarily on the child's behavioral, communicative, or educational outcomes, while the psychological needs of mothers may

receive less direct attention. However, the well-being and emotional regulation of mothers are central to the quality of the caregiving environment. When mothers become less stressed and more mindful in interaction with the child, they may be better able to provide consistent, accepting, and emotionally responsive care. Therefore, mindfulness training can be viewed as a complementary intervention alongside educational, behavioral, and rehabilitation services for children with autism.

The present study had several limitations that should be considered when interpreting the findings. First, the sample size was relatively small and included only mothers of children with autism who referred to one autism center in Chalus; therefore, the generalizability of the findings to fathers, other caregivers, families from different regions, and families with different socioeconomic or cultural backgrounds should be made with caution. Second, the study relied on self-report questionnaires, and participants' responses may have been influenced by social desirability, response bias, or temporary emotional states. Third, the follow-up period was limited to two months, which does not allow firm conclusions about the long-term durability of the intervention effects. Fourth, the study did not assess child-related outcomes, such as behavioral problems, adaptive functioning, communication skills, or emotional regulation, and therefore it is not possible to determine whether improvements in maternal stress and parent-child relationship quality were accompanied by measurable changes in child functioning. Finally, although the control group received no intervention, the study did not include an active comparison group, so the specific effects of mindfulness training cannot be fully separated from nonspecific factors such as group support, attention from the trainer, or expectation of improvement.

Future studies are recommended to replicate this research with larger samples and in multiple autism centers across different cities to increase the external validity of the findings. It would also be useful to include fathers, grandparents, and other primary caregivers to examine whether mindfulness training has similar effects across different caregiving roles. Future research should use longer follow-up periods, such as six months or one year, to evaluate the long-term stability of intervention outcomes. In addition, future studies can compare mindfulness training with active interventions, such as parent management training, acceptance and commitment therapy, compassion-focused therapy, or combined parent-training programs, to identify the relative and specific effectiveness of each

approach. Researchers are also encouraged to include observational measures of parent–child interaction, clinical interviews, physiological stress indicators, and child behavioral outcomes in order to provide a more comprehensive assessment of intervention effects. Examining mediating variables such as emotion regulation, self-compassion, parental acceptance, psychological flexibility, and coping strategies may also clarify the mechanisms through which mindfulness training reduces parenting stress and improves the parent–child relationship.

Based on the findings of the present study, mindfulness training can be recommended as a practical and supportive intervention for mothers of children with autism in autism centers, rehabilitation clinics, psychological counseling centers, and family therapy settings. Practitioners can use structured mindfulness sessions to help mothers identify stress responses, pause before reacting, regulate difficult emotions, reduce self-blame, and interact with their child with greater awareness and acceptance. The program can be integrated into parent education services and delivered in group formats to provide both skill training and emotional support. Clinicians and counselors should adapt mindfulness exercises to the real daily experiences of mothers, such as managing tantrums, sleep problems, feeding difficulties, repetitive behaviors, public judgment, and treatment-related pressure. It is also recommended that mothers be encouraged to continue brief daily practices after the end of formal sessions, because regular practice can help maintain gains in stress reduction and relational quality. Training professionals in autism centers to deliver mindfulness-based parent programs may improve the comprehensiveness of services by addressing not only the child’s needs but also the psychological well-being of the caregiver and the emotional quality of the parent–child relationship.

Authors’ Contributions

Authors equally contributed to this article.

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

Transparency Statement

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Ethics Considerations

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