Analysis of the Effects of Schema-Based and Mindful Parenting on Reducing Sleep Problems and Aggression in Children with Mild Autism Spectrum Disorder

Sedigheh. Bakhtiari Shahri[1], Alireza. Rajaei[2*], Sepideh. Pourhydari[3]

[1] Ph.D. Student, Department of Counseling, Mashhad Branch, Islamic Azad University, Mashhad, Iran
[2] Associate Professor, Department of Counseling , Mashhad Branch, Islamic Azad University, Mashhad, Iran
[3] Assistant Professor, Department of Psychology, Khorasan Institute of Higher Education, Mashhad, Iran

* Corresponding author email address: rajaei.46@yahoo.com

Article Info

Article type:
Original Article

ABSTRACT

Objective: This study aimed to examine the effects of schema-based and mindful parenting training on reducing sleep problems and aggression in children with mild autism spectrum disorder (ASD).

Methods: The research utilized a quasi-experimental design with pretest-posttest measurements, a control group, and a one-month follow-up. The study population consisted of 7- to 12-year-old children with mild ASD and their mothers from autism centers in Mashhad, Iran. Forty children (20 boys and 20 girls) and their mothers were selected using purposive sampling and randomly assigned to two intervention groups (schema-based and mindful parenting) and one control group. Both intervention groups received 12 weekly 90-minute training sessions, while the control group received no intervention. Data were collected using the Aggression Questionnaire and the Children's Sleep Habits Questionnaire and analyzed with SPSS software using one-way ANOVA and covariance analysis (ANCOVA).

Findings: Results showed that both schema-based and mindful parenting interventions significantly reduced sleep problems and aggression in children with mild ASD. The schema-based parenting group exhibited notable improvements in child-parent interactions and a reduction in maladaptive behaviors, while the mindful parenting group demonstrated enhanced maternal acceptance, reduced parenting stress, and improved emotional understanding of the child. Post-intervention comparisons indicated significant differences between experimental and control groups, with both interventions yielding positive impacts on sleep quality and aggressive behaviors.

Conclusion: The findings suggest that schema-based and mindful parenting approaches can be effective in addressing sleep disturbances and reducing aggressive behaviors in children with mild ASD.

Keywords: Schema-Based Parenting, Mindful Parenting, Sleep Problems, Aggression.

1. Introduction

Autism Spectrum Disorder (ASD) is a term used to describe a set of core social communication deficits and repetitive sensory-motor behaviors associated with a strong genetic component, as well as other causes (Alsabbagh et al., 2018). With an estimated prevalence of 1.85% (1 in every 54 births) (Maenner et al., 2021), there are approximately 52 million cases globally and 7.7 million years of life lived with disability annually (Lord et al., 2018). The number of children diagnosed with ASD has increased significantly over the past 20 years (Moghaddam, 2024; Saeed Manesh & Azizi, 2017).

ASD is accompanied by multiple emotional-behavioral problems. These include externalizing issues (such as hyperactivity, antisocial behaviors, and aggression) and internalizing problems (such as anxiety and depression) (Gleason et al., 2016). Behavioral problems are often first observed in early elementary years, peak between the ages of 8 and 15, and have an estimated prevalence in school-aged children of 5% to 20%. These issues create numerous challenges for teachers, families, and the children themselves and are associated with a high degree of social difficulties (Abdolali et al., 2023). Aggression is a behavior that threatens or causes harm and may manifest verbally or physically through actions like hitting, biting, and throwing objects (Fitzpatrick et al., 2016; Moreira, 2024).

Sleep is a significant aspect of life, playing a vital role in the motor, mental, and cognitive development of children (Jiang et al., 2015). Children with sleep problems experience cognitive and emotional issues such as depression, anxiety, cognitive impairments, learning disabilities, and mental developmental delays (Fallahzadeh et al., 2015).

The range of challenges for children with ASD extends beyond the individual, affecting their families and others as well. Family is the first and most enduring factor considered foundational for a child's personality and subsequent behaviors, and many psychologists argue that the roots of personality disorders and psychological illnesses should be traced to early family upbringing (Moradiyani Gizeh Rod et al., 2016). Depending on the parenting style adopted, parents apply various disciplinary strategies to manage their children's behavior, and these strategies form a critical component of parenting. Parenting encompasses methods and behaviors that parents employ in raising their children and can influence child development (Clauser et al., 2020; Lee et al., 2024).

The prevalence of ASD in Iran has been increasing, with mothers of these children facing numerous challenges. One of the most significant factors influencing children's emotional and behavioral problems is the parenting style, particularly the mother's parenting style (Clauser et al., 2020; Li et al., 2024). Parenting is a complex activity involving specific methods and behaviors that, interacting with each other, impact the child's upbringing. This activity is defined as parents' efforts to control and socialize their children (Baumrind, 1991). Additionally, it reflects the emotional relationships and the overall manner of interaction between parents and children, a critical factor in child development and learning (Hollenstein, 2004). Various parenting styles exist, each effective according to specific variables, and effective parenting styles can prevent many psychological and social harms, predicting children's future socio-psychological growth, well-being, academic performance, and even behavioral issues (Shokouhi Yekta et al., 2006). Studies have shown that parenting styles significantly impact children's personality development, with appropriate parenting styles positively correlated with child health and maladaptive parenting linked with child health issues (Bitaraf et al., 2010). Parenting employs different styles that emphasize various variables, such as authoritative, authoritarian, permissive, and uninvolved styles (Medeiros et al., 2016).

Schemas are emotional and cognitive patterns developed during childhood and adolescence, persisting throughout a person's life. These schemas serve as templates for processing later experiences and are enduring, pervasive themes composed of memories, emotions, cognitions, and bodily sensations. Formed in childhood and adolescence, schemas guide the processing of future experiences and can trigger psychological distress, dysfunctional attitudes, pessimistic explanatory styles, hopelessness, and helplessness across different life situations, leading to various forms of psychological distress, including depression and anxiety. Parental challenges, especially for mothers of children with mild ASD, including low self-coherence and a reduced tolerance for distress, have received limited attention in research. The literature indicates that research on schema-based parenting education, particularly for children with ASD, is lacking. Consequently, it is essential to conduct a study on the effectiveness of schema-based parenting for children with mild ASD (Dehghani et al., 2022; Karimi Moghaddam et al., 2023; Mehrabi Nia et al., 2022; Sabzi et al., 2022).

Another parenting style shown in recent research to reduce externalizing behaviors and behavioral problems in children and improve parenting quality, especially in mothers, is mindful parenting (Bögels et al., 2014). Since many sleep problems and aggression in children with ASD are associated with parenting style, it seems that schema-based and mindful parenting styles have significant effects on these variables. By improving parenting style through schema modification and the use of mindful parenting, mothers may enhance their parenting approach, thus helping to address their children's aggression and sleep problems. It is anticipated that following schema-based parenting interventions and educational sessions, mothers will adopt an authoritative approach, encouraging their children's independence while maintaining appropriate limits and control, fostering a warm relationship, attending to their children's needs and interests, and considering the behavioral consequences. Additionally, it is expected that mothers trained in mindful parenting will, besides demonstrating authoritativeness, experience less psychological vulnerability, thus reducing their children's aggression and improving sleep quality.

Research in recent years has examined the effectiveness of various parenting interventions, particularly schema-based, mindful, and positive parenting, on psychological outcomes in children. Dehghani et al. (2022) compared positive parenting training with bibliotherapy in reducing anxiety in children through a schema-based approach. Using a pretest-posttest control group design, they found both methods effective, though positive parenting was superior (Dehghani et al., 2022). Similarly, Mehrabi Nia et al. (2022) developed an educational package aimed at schema-based competent parenting, focusing on components like attachment security, autonomy, and healthy emotional expression. This qualitative content analysis study showed the package's high validity, offering parents a framework to meet their children's emotional needs effectively (Mehrabi Nia et al., 2022). Ebrahimirad and Sajadian (2022) explored the impact of mindful parenting on parental care and maternal burnout among mothers of children with internalizing disorders. Using a quasi-experimental pretest-posttest design, they demonstrated that mindful parenting training significantly improved parental care and reduced burnout, highlighting its value for mothers dealing with child behavioral challenges (Ebrahimi Rad & Sajadian, 2022). Another study by Karimi-Moghadam et al. (2023) on schema-based parenting aimed to improve resilience in adolescents with behavioral issues, showing that schema-based approaches significantly enhanced resilience, equipping youth to handle adversity (Karimi Moghaddam et al., 2023). Sabzi et al. (2021) studied schema-based group parenting's effects on modifying children's maladaptive schemas and improving parent-child relationships. Their quasi-experimental design showed schema-based training's positive impact on child vulnerability, distrust, and failure schemas, while also enhancing relationship intimacy and dependency, though not conflict (Sabzi et al., 2022). Comparing the effectiveness of different approaches can help in selecting the best method to promote aspects of mental health, such as sleep and aggression, in children with ASD. Given the above considerations and the limited research resources, the researcher aims to design a study in Iran to analyze the combined effects of schema-based and mindful parenting on reducing sleep problems and aggression in children with mild ASD.

2. Methods

2.1. Study Design and Participants

This study used a quasi-experimental pretest-posttest design with a control group and a one-month follow-up period, suited to the research's subject matter. The statistical population consisted of all children aged 7 to 12 with mild Autism Spectrum Disorder (ASD) and their mothers, enrolled in one autism center under the Ministry of Education's supervision (Tabassom) and five welfare-based autism centers (Ava, Armaghan Noor, Kavosh, Navid-e Zendegi, Takapo) in Mashhad. Due to time, cost constraints, and ethical considerations, the researcher used purposive sampling for the intervention study, selecting a limited sample. A sample size of 40 was determined using Cochran's formula, with random assignment into groups. The sample included 40 children (20 boys and 20 girls) and their mothers, who were randomly assigned to three groups: Experimental Group 1 (13 participants) with a mindfulness-based parenting approach, Experimental Group 2 (13 participants) with a schema-based parenting approach, and a control group (14 participants). The first experimental group received mindfulness-based parenting training in 12 weekly 90-minute sessions, while the second experimental group received schema-based parenting training in 12 weekly 90-minute sessions. The control group received no intervention.

Inclusion Criteria included:

- Diagnosis of mild ASD by a psychiatrist; age range of 7 to 12 years.

- No concurrent parenting education program (for parents).
- No physical disabilities, seizure problems, or epilepsy; normal hearing (confirmed by pure-tone audiometry) and normal or corrected vision (confirmed by Snellen chart).
- Literacy in reading and writing for mothers.
- Mothers' consent and ability to attend sessions.

Exclusion Criteria included:

- Absence from more than two sessions.
- Lack of willingness to continue the study by children or their mothers.

2.2. Measures

2.2.1. Aggression

This questionnaire includes 21 items covering relational and overt aggression, rated on a four-point scale: rarely (1), once a month (2), once a week (3), and most days (4). It measures different intensities of aggressive behavior, with subscales for physical aggression (7 items), reactive verbal aggression and hyperactivity (6 items), and relational aggression (8 items). The cutoff score for identifying an aggressive child is one standard deviation above the mean. Cronbach's alpha for the entire questionnaire is 0.91, indicating excellent reliability, with subscale alphas of 0.85 for physical aggression, 0.89 for relational aggression, and 0.83 for reactive verbal aggression (Ebrahimi Rad, 2021; Moradiyani Gizeh Rod et al., 2016).

2.2.2. Sleep Habits

Developed by Owens, Spirito, and colleagues (2000), this 45-item questionnaire assesses sleep quality and habits in children and is completed by parents. Only 33 items are scored, ranging from 1 (rarely) to 3 (usually), except for certain items scored in reverse. The scoring range is between 33 and 99, with subscales for sleep resistance, sleep onset delay, sleep duration, sleep anxiety, night waking, parasomnias, sleep-disordered breathing, and daytime sleepiness. Internal consistency (Cronbach's alpha) for the subscales was 0.70 in a non-clinical sample of children aged 4 to 10 years, with test-retest reliability between 0.62 and 0.79 over two weeks. In Iran, validity was assessed via content validity by Shoghi, Khanjari, Farmani, and Hosseini (2005), with reliability via a two-week test-retest method for 10 children aged 6 to 11, yielding 0.97. Cronbach's alpha ranged between 0.77 and 0.79 (Fallahzadeh et al., 2015).

2.2.3. Autism Social Skills

This 48-item profile, created by Bellini and Hopf (2007), is used to assess a wide range of social behaviors in children and adolescents aged 6 to 17 with ASD. It is highly sensitive to treatment-related changes and can be completed by parents, teachers, or any adult familiar with the child's social behaviors. The completion time is approximately 15-20 minutes, using a four-point Likert scale from 1 (never) to 4 (always). Higher scores indicate more positive social behaviors. Test-retest reliability over three weeks is 0.97, with subscale reliabilities for social interaction, social participation, and disruptive social behaviors of 0.96, 0.74, and 0.96, respectively. Validity and reliability were confirmed by Pouratmad et al. (2017) in Iran (Faramarzi et al., 2021).

2.3. Intervention

2.3.1. Mindful Parenting Intervention

The mindful parenting intervention is designed to foster parents' awareness and emotional regulation in their parenting practices. Through mindfulness techniques and self-reflection exercises, parents learn to better understand their reactions and create supportive responses to their children's needs. Each session builds upon the previous one, introducing various mindfulness practices, discussions, and role-play exercises to enhance parenting skills (Bögels et al., 2014; Ebrahimi Rad & Sajadian, 2022; Medeiros et al., 2016; Moradiyani Gizeh Rod et al., 2016; Potharst et al., 2021).

Session 1: Introduces the group and sets ground rules. Parents engage in a guided relaxation exercise, the "raisin exercise," to practice awareness. Basic concepts of mindful parenting are explained, including stress-relief practices and body scan meditation, and participants are given a mindfulness exercise for home practice.

Session 2: Reinforces the body scan exercise and encourages parents to observe their child's behaviors mindfully. Group members discuss morning mindfulness exercises and gratitude practices, with a short breathing exercise. Instructions for at-home practice are provided.

Session 3: Begins with a seated relaxation exercise, followed by a discussion of home practice. Parents learn the three-minute breathing space technique and participate in a gentle yoga session. Emphasis is placed on observing their body's response to parenting stress. Self-compassion practices and homework are assigned.

Session 4: Focuses on relaxation with attention to sounds and thoughts. Parents learn to distinguish between fight, flight, and freeze responses under stress. Visualization exercises help parents accept parenting stress, with a standing yoga session and discussion of homework.

Session 5: Covers relaxation with an emphasis on emotions. Participants explore schema-based parenting reactions and mindfulness walking. The session also includes managing emotional responses and reflecting on at-home mindfulness practice.

Session 6: Focuses on selective attention during seated relaxation, with group discussions on parenting schemas. An outdoor mindful walk is conducted, encouraging participants to view others' perspectives and revise their responses.

Session 7: Introduces a loving-kindness meditation, reviewing weekly practices. Parents discuss integrating mindfulness into daily routines, exploring needs, and engaging in role-play exercises for compassionate parenting responses.

Session 8: Involves seated relaxation, accompanied by stories illustrating conflicting emotions. Techniques for managing stress responses like fight, flight, and freeze are reinforced, with a standing yoga session to conclude.

Session 9: Revisits stress management by reviewing a weekly tension diary. Parents practice awareness and acceptance through visualization and standing yoga, followed by a brief discussion of continued mindfulness practice.

Session 10: Focuses on attentive listening to thoughts and sounds. Parents practice responding to stress with avoidance or engagement strategies, applying the three-minute breathing exercise under stress, and complete the session with standing yoga.

Session 11: Reviews the previous week's compassion practices, with a relaxation session emphasizing what has been learned. Parents create a four-week mindfulness plan, including mountain and stone meditation, and review resources for ongoing support.

Session 12: Completes the intervention by reviewing body scans and previous exercises. Parents finalize their four-week mindfulness plan, with final reflections and strategies for daily mindful parenting.

2.3.2. Schema-Based Parenting Intervention Protocol

The schema-based parenting intervention teaches parents to recognize and address maladaptive schemas in themselves and their children. It aims to foster secure attachments and autonomy by identifying core emotional needs and using structured activities to meet these needs effectively (Dehghani et al., 2022; Karimi Moghaddam et al., 2023; Mehrabi Nia et al., 2022; Sabzi et al., 2022).

Session 1: Introduces group members, establishes rules, and explains the necessity of schema-based parenting. Briefly explains schema theory and coping styles. Parents list their child's best and worst behaviors and reflect on their own and their child's coping styles.

Session 2: Explains common parenting styles and five core child needs, focusing on identifying each parent's approach to meeting these needs.

Session 3: Introduces schemas related to disconnection and impaired autonomy, guiding parents to observe their behaviors and relate them to underlying maladaptive schemas.

Session 4: Explains schemas of other-direction, impaired limits, and hypervigilance. Parents explore their own and their child's behaviors linked to these schemas.

Session 5: Discusses behaviors that create a secure attachment, such as stability, predictability, and physical and emotional safety. Parents are encouraged to observe their child's behavior stemming from unmet needs.

Session 6: Focuses on fulfilling attachment needs and introduces self-care techniques. Parents are encouraged to initiate self-care education for their children.

Session 7: Addresses fostering autonomy by allowing age-appropriate choices and personal responsibility. Parents are encouraged to reduce overly controlling behaviors and observe their child's reactions.

Session 8: Teaches setting behavioral boundaries and creating family rules. Parents practice these techniques with their children, assessing their effectiveness.

Session 9: Addresses the need for emotional expression by teaching healthy emotional communication and empathy. Parents practice empathy and analyze their child's emotions in challenging situations.

Session 10: Discusses the need for play and balance between work and fun. Parents are encouraged to engage in non-instructional play with their children and schedule designated playtimes.

Session 11: Covers understanding temperamental traits and mood management in children. Parents identify their child's temperament and learn techniques for teaching self-calming.

Session 12: Concludes with a review of the program and answers parents' questions. Parents create a plan for

implementing schema-based strategies, including a checklist to replace maladaptive parenting with constructive methods.

2.4. Data Analysis

Data were analyzed using SPSS-20 software. In the descriptive analysis, frequency, percentage, mean, and standard deviation were calculated. In the inferential analysis, multivariate analysis of covariance (MANCOVA) and univariate analysis of covariance (ANCOVA) were used to test the study hypotheses.

3. Findings and Results

This section presents the findings, including statistical indicators such as the pretest and posttest means, standard deviations, and comparisons for both the schema-based and mindful parenting interventions. These indicators help clarify the impact of these interventions on key variables.

Table 1 below provides descriptive statistics across three groups—control, schema-based parenting, and mindful parenting—for aggression, interactions, and sleep problems. In the pretest phase, the highest mean is observed for interactions in both experimental groups, while the lowest mean is for aggression in the experimental groups. In the post-test, the highest mean remains in interactions within the experimental groups, and the lowest is for aggression in the control group.

Table 1

Descriptive Statistics

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Aggression	Control	67.94	11.29	65.83	10.55
	Schema-Based Parenting	66.57	11.17	53.62	9.28
	Mindful Parenting	66.57	11.17	52.23	10.97
Interactions	Control	151.91	26.38	150.24	25.93
	Schema-Based Parenting	153.36	26.29	162.00	26.33
	Mindful Parenting	153.36	26.29	164.54	22.67
Sleep Problems	Control	147.36	24.19	145.08	22.42
	Schema-Based Parenting	146.68	24.28	117.07	28.50
	Mindful Parenting	146.68	24.28	121.99	28.60

The results from the Kolmogorov-Smirnov test indicate no significant difference between expected and observed distributions for all variables, confirming normality ($p > 0.05$).

Hypothesis 1: Schema-based parenting training impacts sleep problems in children with mild ASD.

Levene's test results indicated a significance level above 0.05 for sleep problems, demonstrating homogeneity across groups. Pretest data collected before the intervention were used to examine homogeneity of regression slopes. No significant interaction was found between pretest sleep problems and group assignment ($p = 0.953$), satisfying the regression slope assumption.

Table 2 shows ANCOVA results, indicating a significant main effect ($F = 30.692$, $p < 0.001$). With pretest sleep scores controlled, posttest differences between experimental and control groups were significant, confirming that schema-based parenting training effectively reduced sleep problems.

Table 2

ANCOVA for Hypothesis 1

Source	Sum of Squares	df	Mean Square	F	p-value
Pretest	13485.147	1	13485.147	82.338	0.000
Group	5026.776	1	5026.776	30.692	0.000
Error	3930.691	24	163.779		
Total	23325.226	26			

Hypothesis 2: Mindful parenting training impacts sleep problems in children with mild ASD.

Levene's test results showed a significance level above 0.05, confirming group homogeneity. No significant interaction was observed between pretest sleep scores and

group assignment (p = 0.741), upholding the assumption of homogeneity.

Table 3 illustrates ANCOVA results, revealing a significant main effect (F = 69.157, p < 0.001). After controlling for pretest sleep scores, posttest results showed significant differences between experimental and control groups, indicating that mindful parenting training effectively reduced sleep problems.

Table 3

ANCOVA for Hypothesis 2

Source	Sum of Squares	df	Mean Square	F	p-value
Pretest	12977.475	1	12977.475	69.157	0.000
Group	3173.734	1	3173.734	16.913	0.000
Error	4503.666	24	187.653		
Total	21588.771	26			

Hypothesis 3: Schema-based parenting training impacts aggression in children with mild ASD.

Levene's test results for aggression yielded a significance level above 0.05, indicating group homogeneity. No significant interaction was observed between pretest aggression levels and group assignment (p = 0.051), validating the regression slope assumption.

Table 4 presents ANCOVA results, showing a significant main effect (F = 62.609, p < 0.001). After controlling for pretest aggression scores, significant differences were found between experimental and control groups in posttest results, affirming that schema-based parenting training effectively reduced aggression.

Table 4

ANCOVA for Hypothesis 3

Source	Sum of Squares	df	Mean Square	F	p-value
Pretest	1918.920	1	1918.920	62.609	0.000
Group	846.639	1	846.639	27.623	0.000
Error	735.586	24	30.649		
Total	3786.0	26			

Hypothesis 4: Mindful parenting training impacts aggression in children with mild ASD.

The significance level for aggression in Levene's test was above 0.05, indicating group homogeneity. No significant interaction was found between pretest aggression levels and group assignment (p = 0.098), supporting the regression slope assumption.

Table 5 displays ANCOVA results, with a significant main effect (F = 35.030, p < 0.001). After controlling for pretest aggression scores, posttest differences between groups were significant, verifying that mindful parenting training effectively reduced aggression.

Table 5

ANCOVA for Hypothesis 4

Source	Sum of Squares	df	Mean Square	F	p-value
Pretest	1819.289	1	1819.289	35.030	0.000
Group	1185.885	1	1185.885	22.834	0.000
Error	1246.447	24	51.935		
Total	4452.0	26			

In summary, both schema-based and mindful parenting interventions significantly impacted sleep problems and aggression in children with mild ASD. Statistical tests confirmed the interventions' effectiveness across all assessed variables, validating the potential of these interventions to address behavioral and emotional challenges in children with mild ASD.

4.   Discussion and Conclusion

The results indicate that schema-based parenting training significantly affects sleep problems in children with mild autism spectrum disorder (ASD). As demonstrated by the analyses, the one-way ANOVA test showed a significant difference between groups, rejecting the null hypothesis that schema-based parenting has no impact on sleep problems in these children, thus confirming the first hypothesis. These findings align with the prior studies (Dehghani et al., 2022; Karimi Moghaddam et al., 2023; Mehrabi Nia et al., 2022; Sabzi et al., 2022). In explaining this hypothesis, it can be said that while no parenting style is perfect, parents of children with ASD or special needs face unique challenges. Judging their parenting approach without considering their context, such as fatigue, financial pressures, and psychological stress, may be unfair. Many families with autistic children endure difficulties unimaginable to families without such experiences. The present study considers maladaptive behaviors that result from unmet needs and examines children's reactions accordingly.

The findings also show that mindful parenting training affects sleep problems in children with mild ASD. The results confirm a significant difference between groups, rejecting the null hypothesis that mindful parenting does not affect sleep problems in these children and supporting the second hypothesis. These results are consistent with prior findings (Bögels et al., 2014; Ebrahimi Rad, 2021; Ebrahimi Rad & Sajadian, 2022; Medeiros et al., 2016; Moradiyani Gizeh Rod et al., 2016; Potharst et al., 2021). The second hypothesis, which suggests that mindful parenting affects sleep problems in children with ASD, can be explained by mindfulness, which enables individuals to face experiences by purposefully focusing on the present moment without judgment, allowing mothers to reassess and give meaningful or positive interpretations to their life situations. Mothers' unconditional acceptance of their children, without judging communication deficiencies or challenging behaviors, can foster close relationships and positive interactions, enhancing the connection with children with ASD. This connection helps mothers better understand their autistic children's needs and respond more effectively, thereby promoting calmer interactions and reducing sleep problems and aggression in these children. Mindfulness in parenting interrupts negative thinking patterns, helping parents focus on interactions with their children instead of dwelling on internal ruminations, fostering a non-judgmental relationship.

Results also indicate that schema-based parenting training affects aggression in children with mild ASD. The one-way ANOVA test revealed significant differences between groups, confirming the third hypothesis and rejecting the null hypothesis that schema-based parenting does not impact aggression in children with ASD. These findings align with prior studies (Dehghani et al., 2022; Karimi Moghaddam et al., 2023; Mehrabi Nia et al., 2022; Sabzi et al., 2022). Schema-based parenting and related interventions can improve quality of life, social adaptability, self-compassion, psychological resilience, emotional regulation, and reduce depression, aggression, and physiological symptoms of chronic illness.

Finally, the results indicate that mindful parenting training affects aggression in children with mild ASD. The data show a significant difference between groups, supporting the fifth hypothesis and rejecting the null hypothesis that mindful parenting training has no effect on aggression in children with ASD. These findings are consistent with the previous studies (Bögels et al., 2014; Ebrahimi Rad, 2021; Ebrahimi Rad & Sajadian, 2022; Medeiros et al., 2016; Moradiyani Gizeh Rod et al., 2016; Potharst et al., 2021). Mindful parenting practices foster a deeper awareness of the unique qualities of each child, enhancing maternal acceptance and reducing parenting stress. Furthermore, mindful parenting enables mothers to better understand their children's emotions and needs, reducing behavioral issues, including aggression. This approach also strengthens mothers' capacity to be present and listen attentively, allowing them to recognize and accept both pleasant and unpleasant moments, thereby decreasing parenting stress and child aggression. Mindful parenting training also encourages mothers to replace maladaptive parenting practices with more appropriate methods, making it an effective intervention for managing aggression in children with mild ASD.

5.   Suggestions and Limitations

This study has several limitations that should be considered when interpreting the results. The sample size was relatively small, which may limit the generalizability of the findings to a broader population of children with mild ASD. Additionally, the intervention was conducted over a short duration, potentially limiting the assessment of long-term effects on sleep and aggression. The study also relied on self-reported data from parents, which could introduce response bias due to personal perceptions or social

desirability. Furthermore, the study only included children from specific centers within a limited geographic area, potentially limiting its applicability across different cultural or socio-economic contexts.

Future research should consider using larger and more diverse samples to improve the generalizability of results across varied populations. Longitudinal studies would also be valuable to assess the sustained impact of schema-based and mindful parenting interventions over time, particularly in managing behavioral and emotional challenges in children with ASD. Additionally, exploring the effects of these interventions in other contexts, such as schools and community settings, could provide insights into their effectiveness outside the family environment. Further studies might also integrate objective behavioral assessments alongside parental self-reports to provide a more comprehensive evaluation of intervention outcomes.

The findings from this study suggest practical implications for mental health professionals and educators working with families of children with ASD. Schema-based and mindful parenting interventions can be incorporated into parent training programs to enhance parental coping strategies and improve child-parent interactions. Educators and therapists should consider incorporating mindfulness and schema-focused practices in support sessions for families to address sleep issues and aggression more effectively. Policies that encourage accessible mental health resources and support systems for these families could also amplify the benefits of such interventions, providing parents with sustainable tools for positive parenting and reducing behavioral challenges in children with mild ASD.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

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.

Acknowledgments

Declaration of Interest

The authors report no conflict of interest.

Funding

Ethical Considerations

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

References

Abdolali, Z., Sepanta, M., & Afshar Zanjani, H. (2023). The Effectiveness of Compassion-Focused Therapy for Parents on Reducing Aggression, Behavioral Problems, and Anxiety in Children. *International Journal of Body, Mind and Culture*, *7*(3), 172-179. https://doi.org/10.22122/ijbmc.v7i3.222

Baumrind, D. (1991). *Effective parenting during the early adolescent transition in P.E. Cowan and E.M. Hetherington (Eds)* (Vol. 2). Erlbaum. https://www.scirp.org/reference/referencespapers?referenceid=830130

Bitaraf, S., Shaeeri, M., & Hakim Javadi, M. (2010). Social phobia, parenting styles, and perfectionism. *Journal of developmental Psychology: Iranian Psychologist*, *7*(25), 75-82. https://www.sid.ir/paper/101451/fa

Bögels, S. M., Hellemans, J., van Deursen, S., Römer, M., & van der Meulen, R. (2014). Mindful parenting in mental health care: effects on parental and child psychopathology, parental stress, parenting, coparenting, and marital functioning. *Mindfulness*, *5*(5), 536-551. https://doi.org/10.1007/s12671-013-0209-7

Clauser, P., Ding, Y., Chen, E. C., Cho, S.-J., Wang, C., & Hwang, J. (2020). Parenting styles, parenting stress, and behavioral outcomes in children with autism. *School Psychology International*, *42*(1), 33-56. https://doi.org/10.1177/0143034320971675

Dehghani, F., Razavi, V. S., Manzari Tavakoli, A., & Andishmand, V. (2022). A comparison of the effects of positive parenting training and bibliotherapy on children's anxiety with a schema-based approach. *Exceptional Children Quarterly*, *22*(4), 69-78. https://joec.ir/article-1-1504-fa.html

Ebrahimi Rad, H. (2021). The Effect of Training Mindfulness to the Mothers of the Children with Autism Spectrum Disorder on the Decrease of their Aggression. *medical journal of mashhad university of medical sciences*, *64*(5). https://mjms.mums.ac.ir/article_19845.html

Ebrahimi Rad, H., & Sajadian, E. (2022). The effectiveness of a mindful parenting training package on parental care and parental burnout in mothers of students with internalizing

disorders. *Psychology Growth*, *11*(11), 145-154. https://frooyesh.ir/article-1-3271-fa.html

Fallahzadeh, H., Etesam, F., & Asgarian, F. S. (2015). Validity and reliability related to the Persian version of the Children's Sleep Habits Questionnaire. *Sleep and Biological Rhythms*, *13*(3), 271-278. https://doi.org/10.1111/sbr.12114

Faramarzi, S., Abbasi, S., Gholami, M., Vahabi, R. S., & Pour Sadoghi, A. (2021). Effectiveness of sensory integration exercises on social interactions and stereotypical behaviors of children with autism spectrum disorder. *Research in cognitive and behavioral sciences*, *10*(2), 71-82. https://www.sid.ir/paper/1005412/fa

Fitzpatrick, S. E., Srivorakiat, L., Wink, L. K., Pedapati, E. V., & Erickson, C. A. (2016). Aggression in autism spectrum disorder: presentation and treatment options. https://doi.org/10.2147/NDT.S84585

Gleason, M., Goldson, E., & Yogman, M. (2016). Council on early childhood, committee on psychosocial aspects of child and family health, section on developmental and behavioral pediatrics. Addressing early childhood emotional and behavioral problems. *Pediatrics*, *138*(6). https://doi.org/10.1542/9781610020862-part04-addressing_early

Hollenstein, T. (2004). Rigidity in parent-child interaction and the development of externalizing and internalizing early childhood. *Journal of abnormal child psychology*, *32*, 595-607. https://doi.org/10.1023/B:JACP.0000047209.37650.41

Jiang, X., Hardy, L. L., Baur, L. A., Ding, D., Wang, L., & Shi, H. (2015). Sleep duration, schedule and quality among urban Chinese children and adolescents: associations with routine after-school activities. *PLoS One*, *10*(1). https://doi.org/10.1371/journal.pone.0115326

Karimi Moghaddam, H., Ghasemzadeh, S., & Arjmandnia, A. (2023). The effectiveness of schema-based parenting on resilience in adolescents with behavioral problems. *Journal of Applied Psychological Research*, *14*(2), 217-229. https://japr.ut.ac.ir/article_93378.html?lang=en

Lee, J. D., Terol, A. K., Yoon, C. D., & Meadan, H. (2024). Parent-to-parent support among parents of children with autism: A review of the literature. *Autism*, *28*(2), 263-275. https://journals.sagepub.com/doi/abs/10.1177/13623613221146444

Li, S. N., Chien, W. T., Lam, S. K. K., Chen, Z. Y., & Ma, X. (2024). Effectiveness of parent-focused interventions for improving the mental health of parents and their children with autism spectrum disorder: A systematic review and meta-analysis. *Research in Autism Spectrum Disorders*, *114*, 102389. https://doi.org/10.1016/j.rasd.2024.102389

Lord, C., Elsabbagh, M., Baird, G., & Veenstra-Vanderweele, J. (2018). Autism spectrum disorder. *The lancet*, *392*(10146), 508-520. https://doi.org/10.1016/S0140-6736(18)31129-2

Maenner, M. J., Shaw, K. A., Bakian, A. V., Bilder, D. A., Durkin, M. S., Esler, A., & Hudson, A. (2021). Prevalence and characteristics of autism spectrum disorder among children aged 8 years-autism and developmental disabilities monitoring network, 11 sites, United States, 2018. *MMWR Surveillance Summaries*, *70*(11), 1. https://doi.org/10.15585/mmwr.ss7011a1

Medeiros, C., Gouveia, M., & Canavarro, M. C. (2016). The Indirect Effect of the Mindful Parenting of Mothers and Fathers on the Child's Perceived WellBeing through the Child's Attachment to Parents. *Mindfulness*, 916-927. https://doi.org/10.1007/s12671-016-0530-z

Mehrabi Nia, M., Talebzadeh Shoushtari, L., & Khorshidzadeh, M. (2022). Development of a competent parenting training package with a schema therapy approach. *Qualitative Research in Behavioral Sciences (QRBS)*, *1*(1), 1-18. https://doi.org/10.22077/qrbs.2022.5066.1005

Moghaddam, K. (2024). Autism Spectrum Disorder: Learning Environments. https://doi.org/10.5772/intechopen.113751

Moradiyani Gizeh Rod, S., Mir Drikvand, F., Hosseini Ramaghani, N., & Mehrabi, M. (2016). The Effectiveness of Mindfulness-based Parenting Training on Anxiety, Depression and Aggression of Mothers with Children Suffering from Oppositional Defiant Disorder. *Armaghane Danesh*, *21*(6), 576-590. https://jssu.ssu.ac.ir/article-1-4399-en.html

Moreira, D. (2024). Addressing the Complex Links Between Psychopathy and Childhood Maltreatment, Emotion Regulation, and Aggression—A Network Analysis in Adults. *Behavioral Sciences*, *14*(2), 115. https://doi.org/10.3390/bs14020115

Potharst, E. S., Baartmans, J., & Bögels, S. M. (2021). Mindful parenting training in a clinical versus non-clinical setting: an explorative study. *Mindfulness*, *12*(2), 504-518. https://doi.org/10.1007/s12671-018-1021-1

Sabzi, N., Farah Bijari, A., & Khosravi, Z. (2022). The effectiveness of group schema-based parenting education to mothers on modifying maladaptive schemas of the child and improving the quality of the parent-child relationship. *Practice in Clinical Psychology*, *10*(1). https://doi.org/10.32598/jpcp.10.1.798.1

Saeed Manesh, M., & Azizi, M. (2017). The effectiveness of acceptance and commitment-based therapy on the rate of acceptance and protective parents of children with autism with a denial of defense mechanism. *Journal of Disability Studies*, *47*(7), 1-7. https://jdisabilstud.org/article-1-830-fa.html

Shokouhi Yekta, M., Parand, A., & Faghihi, A. (2006). A Comparative Study on Child Rearing Styles. *Journal of Islamic Education*, *3*, 115-140. https://www.sid.ir/paper/100618/fa