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Design of an Emotion-Focused Painting Training Program and Evaluation of Its Effectiveness on Autism Symptoms in Children with High-Functioning Autism

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A B S T R A C T

The present study aimed to design an emotion-focused painting training program and evaluate its effectiveness on autism symptoms in children with high-functioning autism. The research method was quasi-experimental, employing a pretest–posttest design with a control group and a two-month follow-up period. The statistical population consisted of children diagnosed with high-functioning autism, aged 10 to 18 years, in Karaj in 2025. From this population, 30 participants were selected through purposive sampling and randomly assigned to an experimental group (n = 15) and a control group (n = 15). The training program was implemented for the experimental group in 10 sessions, each lasting 45 to 60 minutes (two sessions per week). The research instrument included the Gilliam Autism Rating Scale (GARS-3). Data were analyzed using repeated measures analysis of variance with SPSS version 26. The results indicated that the mean scores of autism symptoms in the experimental group significantly decreased compared to the control group at both posttest and follow-up stages ($p < .001$). Based on the findings, it can be concluded that the emotion-focused painting training program, emphasizing the identification, expression, and regulation of emotions through painting, was effective in reducing autism symptoms in children with high-functioning autism, and this effect remained stable over time. The use of this program as a complementary intervention in rehabilitation centers and special education schools is recommended.

Keywords: *Emotion-focused painting, autism symptoms, high-functioning autism, social skills.*

1. Introduction

Autism spectrum disorder (ASD) is a complex neurodevelopmental condition characterized by persistent deficits in social communication and interaction, alongside restricted and repetitive patterns of behavior, interests, or activities (Hyman et al., 2020; Qin et al., 2024). The heterogeneity of ASD is reflected in variations in cognitive functioning, language abilities, and adaptive behaviors, with high-functioning autism referring to individuals who possess relatively intact intellectual and verbal capacities despite significant social and emotional challenges (Mammadova, 2025; Papaeliou, 2024). Children with high-functioning autism often experience pronounced difficulties in emotional understanding, expression, and regulation, which in turn affect their interpersonal relationships, academic functioning, and overall quality of life (Ibrahimagic et al., 2021; Xu, 2024). These emotional and social impairments are frequently accompanied by repetitive behaviors, sensory processing abnormalities, and executive function deficits, further complicating developmental trajectories (Bhat, 2021; Glod et al., 2019; Iversen & Lewis, 2021).

One of the core challenges in ASD lies in deficits in emotional processing, including the identification, differentiation, and appropriate expression of emotional states (Russell et al., 2019). Children with ASD often struggle to interpret emotional cues in themselves and others, which contributes to impaired social reciprocity and increased levels of anxiety and behavioral rigidity (Glod et al., 2019; Ibrahimagic et al., 2021). Moreover, the inability to regulate emotions effectively can lead to maladaptive behaviors such as aggression, withdrawal, or stereotyped actions, thereby reinforcing the cycle of social isolation (Bakhshi et al., 2018; Esmaeili et al., 2021). These findings underscore the importance of developing targeted interventions that address emotional competencies as a central component of therapeutic programs for children with ASD.

In recent years, there has been growing interest in the use of non-verbal and creative therapeutic approaches to support emotional development in children with ASD. Among these, art therapy has emerged as a promising modality due to its capacity to bypass linguistic limitations and provide alternative channels for expression (Eisner, 2002; Lu, 2022). Art-based interventions, particularly those involving drawing and painting, enable children to externalize internal experiences, explore emotional content, and develop symbolic representation skills (Li et al., 2025; Wright, 2023). From a theoretical perspective, expressive art therapy integrates cognitive, behavioral, and emotional processes, facilitating self-awareness and emotional regulation through structured creative activities (Eo et al., 2022; Zhu, 2025).

Empirical evidence supports the effectiveness of art therapy interventions in improving various domains of functioning in children with ASD. For instance, painting-based interventions have been shown to enhance emotional expression and social behavior by engaging embodied cognition processes, thereby linking sensory-motor experiences with emotional awareness (Li et al., 2025). Similarly, studies have demonstrated that structured art activities can reduce repetitive behaviors and improve social skills, while also positively influencing parental emotional responses (Inci & Saglam, 2025). Other research has highlighted the role of art therapy in fostering emotional empathy and self-image, particularly when interventions are tailored to the developmental needs of individuals with ASD (Eo et al., 2022; Malhotra, 2019). Additionally, art-based approaches have been associated with improvements in motor skills and functional abilities, further supporting their multidimensional benefits (Sabet & GholamiHeidarAbadi, 2021).

The integration of emotion-focused components into art therapy interventions represents an important advancement in this field. Emotion-focused approaches emphasize the identification, understanding, and regulation of emotions as key mechanisms underlying behavioral and social change (Zhu, 2025). By combining structured emotional education with creative expression, emotion-focused painting programs can provide children with ASD opportunities to practice recognizing emotional states, linking emotions to contextual cues, and developing adaptive coping strategies (Ma & Cao, 2024; Xu, 2024). Such interventions align with contemporary models of ASD rehabilitation, which advocate for holistic and individualized approaches that address both cognitive and affective domains (Qin et al., 2024).

Despite the growing body of research on art therapy in ASD, several gaps remain in the literature. First, many existing studies have focused on general art-based interventions without explicitly targeting emotional competencies as a primary outcome. Second, there is a need for culturally adapted and context-specific intervention programs that consider sociocultural factors influencing emotional expression and therapeutic engagement (Mammadova, 2025). Third, the methodological rigor of some studies has been limited by small sample sizes, lack of

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control groups, or absence of follow-up assessments, which restricts the generalizability of findings (Xu, 2024). Furthermore, while previous research has demonstrated short-term benefits of art therapy, fewer studies have examined the stability of these effects over time.

In the Iranian context, research on emotion-focused art therapy for children with high-functioning autism remains relatively scarce. Although some studies have reported positive effects of art therapy and play-based interventions on behavioral and emotional outcomes (Bakhshi et al., 2018; Esmaeili et al., 2021), there is a lack of systematically designed programs that integrate cognitive–behavioral–emotional principles with expressive art techniques. Given the cultural emphasis on emotional restraint and the potential barriers to verbal expression, non-verbal interventions such as painting may offer a particularly suitable modality for this population. Additionally, the development of structured training programs with validated content and standardized implementation procedures is essential to ensure the effectiveness and replicability of interventions in clinical and educational settings.

Another important consideration is the role of executive functioning in the manifestation of autism symptoms. Executive function deficits, including difficulties in cognitive flexibility, inhibition, and working memory, have been linked to repetitive behaviors and impaired emotional regulation in children with ASD (Iversen & Lewis, 2021). Art-based interventions that incorporate structured tasks and problem-solving activities may contribute to the enhancement of executive functioning skills, thereby indirectly reducing core symptoms of ASD (Zhu, 2025). Moreover, the multisensory nature of painting activities can support sensory integration processes, which are often disrupted in children with ASD and contribute to behavioral and emotional dysregulation (Bhat, 2021; Glod et al., 2019).

Overall, the literature suggests that emotion-focused painting interventions have the potential to address multiple dimensions of functioning in children with high-functioning autism, including emotional awareness, social interaction, and behavioral flexibility. However, there remains a need for rigorously designed studies that evaluate the effectiveness of such interventions using controlled experimental designs and standardized measurement tools. In particular, the inclusion of follow-up assessments is crucial to determine the sustainability of intervention effects over time.

Therefore, the present study aims to design an emotion-focused painting training program and evaluate its effectiveness on reducing autism symptoms in children with high-functioning autism.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of purpose and quasi-experimental in terms of method, employing a pretest–posttest design with a control group and a two-month follow-up. The study was conducted in two main phases: the first phase involved the design and validation of the emotion-focused painting training program, and the second phase examined the effectiveness of this program on autism symptoms in children with high-functioning autism. The statistical population of the study consisted of two parts: in the validation phase, experts and specialists in psychology and special education with expertise and research or practical experience in autism spectrum disorder, art therapy (painting therapy), and emotion-focused educational programs in Iran; and in the effectiveness phase, children and adolescents (male and female) diagnosed with high-functioning autism, aged 10 to 18 years, who had referred to rehabilitation centers in Karaj in 2025. In the validation phase, 10 experts in psychology and special education with relevant research or clinical experience in autism, painting therapy, or emotion-focused education were selected using purposive sampling to evaluate the content and face validity of the training package. In the effectiveness phase, purposive sampling was also employed; accordingly, 30 children and adolescents with high-functioning autism who met the inclusion criteria were selected from clients of Mofid Psycho-Research Rehabilitation Center (Autism Spectrum Rehabilitation Center Tavanjoo – Edno Visual Arts Workshop) in Karaj and were randomly assigned to two groups of 15 participants (experimental and control groups). During the research process, none of the participants withdrew from the study, and the final analysis was conducted on data from all 30 participants. Inclusion criteria included being within the age range of 10 to 18 years, having a diagnosis of high-functioning autism based on the criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and confirmation by the disability commission (ICF) of the Alborz Province Welfare Organization, possessing sufficient verbal ability for basic communication, absence of comorbid disabilities (such as blindness, deafness, or severe intellectual disability), and obtaining informed consent from parents or legal guardians for participation in the intervention program. Exclusion

criteria included absence from more than two consecutive sessions or three non-consecutive sessions during the intervention period, lack of meaningful cooperation in performing session activities and exercises, occurrence of acute physical or psychological illness during the intervention that prevented continued participation, and voluntary withdrawal of the child or parents from the study. It should be noted that none of the participants met the exclusion criteria, and all children attended the sessions with full cooperation.

The implementation procedure was as follows: after approval of the research proposal by the university and obtaining the ethics code, the study was conducted in two separate phases. In the first phase, for the design of the training package, a comprehensive review of theories, empirical studies, and practical programs related to emotional education, painting therapy, and emotion-based interventions in children with autism was conducted. Following analysis and synthesis of these materials and considering the cultural context of Iranian society, a comprehensive program aimed at developing emotional identification, expression, and regulation skills was developed. In designing this package, the general instructional design model was utilized, including the stages of analysis, design, development, implementation, and evaluation. After developing the initial version of the program, it was provided to 10 experts in psychology and special education for validation purposes. The experts reviewed the content of the sessions, tools, and worksheets and provided their feedback using an evaluation checklist. After collecting and analyzing their feedback, necessary revisions were made and the package was prepared for pilot implementation. The program was then piloted with 5 participants from the center, and after resolving potential issues and obstacles, the final version of the training package was developed. In the second phase, after obtaining the necessary permissions from the university and presenting them to Mofid Psycho-Research Rehabilitation Center, detailed explanations regarding the study objectives and implementation procedures were provided to parents and staff, and confidentiality of information was assured. Subsequently, 30 eligible participants were selected and randomly assigned to experimental (n = 15) and control (n = 15) groups. Both groups were assessed at the pretest stage (prior to the intervention), with parents completing the relevant questionnaires. Autism symptoms were assessed using the Gilliam scale. The experimental group received the emotion-focused painting training program in 10 sessions lasting 45 to 60 minutes (two sessions per week). These sessions were conducted individually with the presence of the child and a trained instructor in the center's visual arts workshop. The control group received no intervention during this period and continued to receive routine services provided by the center. One week after completion of the intervention, posttest assessments were conducted for both groups, and a follow-up assessment was performed two months later. Participation in the study was based on full informed consent obtained from parents and participants.

2.2. Measures

In this study, two main instruments were used for data collection at different stages. To evaluate the qualitative and quantitative aspects of the designed training package, an evaluation checklist was used. This instrument was developed based on the study by Bostanzar and Rezaei (2017) and was adapted to align with the objectives of the present study. The checklist consisted of seven key dimensions: validity, usability, coherence, completeness, perceptibility, novelty, and acceptability. The items were rated on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The validity of this instrument was confirmed through expert review in the original study, and its reliability was established using Cronbach's alpha (0.86).

The Gilliam Autism Rating Scale (GARS-3), also known as the Garth test, was developed by Gilliam (1994) to diagnose and determine the severity of autism symptoms. The third edition of this scale includes six subscales: stereotyped behaviors, communication, social interaction, sensory processing, cognitive processing, and maladaptive behaviors, comprising a total of 58 items. In the present study, based on the research objectives, three subscales—stereotyped behaviors, communication, and social interaction—were utilized. This scale was translated and standardized in Iran by Ahmadi et al. (2011). Test–retest reliability coefficients for the subscales of stereotyped behaviors, communication, and social interaction were reported as 0.74, 0.92, and 0.73, respectively, and Cronbach's alpha for the total scale was reported as 0.89. In the present study, Cronbach's alpha for the total scale was calculated as 0.87.

2.3. Intervention

The intervention protocol of the present study was developed based on cognitive–behavioral–emotional

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theories and the expressive art therapy approach, and was implemented in 10 individual sessions lasting 45 to 60 minutes over a two-month period (two sessions per week). The first session was devoted to orientation and pretest administration, during which the researcher and instructors were introduced to the children and their parents, the objectives of the study were explained, and psychological assessments were conducted. The second and third sessions focused on introducing and identifying basic emotions (happiness, sadness, anger, and fear) through the use of emotion cards, facial expression exercises, matching complementary cards, completing incomplete faces, and drawing facial expressions, along with discussion of depicted emotions using worksheets such as faceless animal figures. The fourth and fifth sessions addressed the causes of emotions, where children explored the antecedents of happiness, sadness, anger, and fear through examples, discussion of personal experiences, and drawing related emotional situations in structured worksheets. The sixth and seventh sessions emphasized emotion regulation strategies, in which effective and ineffective responses to emotions were taught; children practiced identifying maladaptive behaviors by crossing them out, illustrating adaptive responses, and coloring appropriate emotion-regulation behaviors, with a specific focus on happiness and sadness in session six and anger and fear in session seven. The eighth session extended emotion regulation skills to interpersonal contexts, where children learned how to respond to others' emotions through drawing activities involving scenarios such as a happy grandfather, a sad grandmother, an angry mother, and a frightened father. The ninth session involved free drawing centered on emotions, in which participants randomly selected an emotion card, engaged in discussion about the selected emotion, and produced drawings reflecting that emotional state. The tenth session followed a similar structure for the remaining emotions, after which the posttest was administered, and a follow-up assessment was conducted two months later.

2.4. Data analysis

In this study, appropriate statistical methods were used for data analysis at different stages of the research. In the validation phase, data obtained from expert evaluations of the training package were analyzed using descriptive statistics, including mean, standard deviation, and frequency of responses. Additionally, the Content Validity Index (CVI) was used to assess content validity. Based on the approach proposed by Shalani et al. (2023), the CVI for each dimension was calculated by dividing the number of experts who rated an item as 3 or 4 (agree or strongly agree) by the total number of experts. A threshold value of 0.79 was considered acceptable for CVI. Furthermore, the Scale-Level Content Validity Index (S-CVI) was calculated by averaging the CVI values across all dimensions to determine the overall adequacy of the instrument. In the effectiveness phase, both descriptive statistics (mean and standard deviation) and inferential statistics were used. Initially, statistical assumptions were examined and confirmed, including normality of data distribution (using the Shapiro–Wilk test), homogeneity of variances (using Levene's test), and equality of variance–covariance matrices (using Box's M test and Mauchly's test). Given the quasi-experimental design and the presence of pretest scores as covariates, multivariate analysis of covariance (MANCOVA) was used to examine group differences at posttest and follow-up stages. All analyses were conducted using SPSS version 26, and the significance level was set at 0.05. Ethical considerations in this study included obtaining informed consent from all parents, emphasizing voluntary participation and the right to withdraw at any stage, ensuring confidentiality of information, respecting the dignity of participants, conducting interventions in a safe environment, providing feedback on results to parents, commitment to compensating any potential harm, adherence to religious and cultural norms of society, obtaining ethical approval from the university ethics committee, providing the intervention free of charge to the experimental group, and offering a brief training workshop to parents in the control group after completion of the study.

3. Findings and Results

In the present study, 30 children with high-functioning autism (15 in the experimental group and 15 in the control group) participated. The mean age of children in the experimental group was 13.53 years (SD = 1.35), and in the control group it was 13.60 years (SD = 1.80). In terms of gender distribution, 66.7% of the experimental group were boys and 33.3% were girls, whereas in the control group 46.7% were boys and 53.3% were girls. The results of statistical tests indicated that there were no significant differences between the two groups in terms of age ($p = .078$), gender ($p = .462$), and educational level ($p = .111$); therefore, the two groups were homogeneous with respect to demographic variables.

Table 1

Comparison of Mean Scores of Autism Symptoms in the Study Participants Before and After the Intervention in the Two Groups

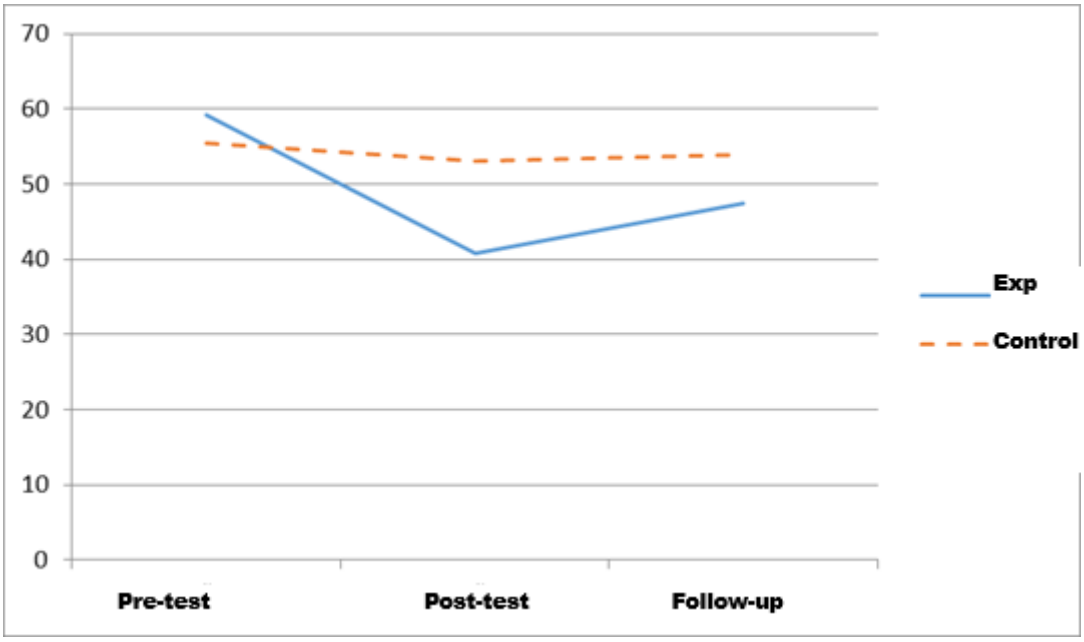
Variable	Group	Pretest (M ± SD)	Posttest (M ± SD)	Follow-up (M ± SD)	Test Statistic	p-value
Autism Symptoms	Experimental	59.13 ± 12.02	40.80 ± 8.84	47.40 ± 5.93	71.29	< .001
	Control	55.53 ± 8.91	53.00 ± 8.09	53.86 ± 7.93	2.05	.172
Between-group comp.	—	—	—	—	—	.360*
	—	—	—	—	—	.001**
	—	—	—	—	—	.017***

To examine the effectiveness of the emotion-focused painting training program on reducing autism symptoms, the mean scores of this variable were compared across three time points: pretest, posttest, and two-month follow-up. First, the assumption of normal distribution of data was assessed using the Kolmogorov–Smirnov test and was confirmed ($p > .05$). The results showed that at the pretest stage, the mean scores of autism symptoms in the experimental group (59.13 ± 12.02) and the control group (55.53 ± 8.91) were not significantly different ($p = .360$), indicating baseline equivalence between the two groups. At the posttest stage, the mean score of the experimental group decreased to 40.80 ± 8.84, whereas the mean score of the control group was 53.00 ± 8.09, and this difference was statistically significant ($p < .001$). At the two-month follow-up stage, the mean score of the experimental group (47.40 ± 5.93) remained significantly lower than that of the control group (53.86 ± 7.93) ($p = .017$).

Within-group comparisons using repeated measures analysis of variance indicated that in the experimental group, the reduction in autism symptom scores from pretest to posttest and follow-up was statistically significant ($p < .001$). In contrast, within-group changes in the control group over time were not statistically significant ($p > .05$). These findings suggest that the emotion-focused painting training program had a significant effect on reducing autism symptoms in children, and this effect remained stable over time, as also illustrated in Figure 1.

Figure 1

Comparison of mean autism symptom scores in the study participants before and after the intervention in the two groups.



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4. Discussion

The findings of the present study demonstrated that the emotion-focused painting training program led to a significant reduction in autism symptoms among children with high-functioning autism in the experimental group compared to the control group. Specifically, the results indicated that while no significant differences existed between the groups at the pretest stage, the experimental group showed a marked decrease in autism symptom scores at both posttest and two-month follow-up assessments. In contrast, the control group did not exhibit significant changes over time. These findings suggest that the intervention was effective not only in producing immediate improvements but also in maintaining these effects over time, indicating the relative stability and durability of the therapeutic outcomes. The observed reduction in symptoms can be interpreted as evidence that structured, emotion-focused artistic engagement may influence core domains of impairment in autism spectrum disorder, including social communication and repetitive behaviors (Hyman et al., 2020; Qin et al., 2024).

One of the key mechanisms underlying the effectiveness of the intervention appears to be its emphasis on emotional identification, expression, and regulation. Children with autism spectrum disorder often experience deficits in recognizing and interpreting emotional states, which contributes to difficulties in social interaction and adaptive functioning (Ibrahimagic et al., 2021; Papaeliou, 2024). The structured activities within the program, such as drawing emotional expressions, discussing emotional experiences, and practicing emotion regulation strategies, likely facilitated the development of emotional awareness. This interpretation is consistent with previous research indicating that emotion-focused interventions can enhance emotional competencies and reduce maladaptive behaviors in children with ASD (Xu, 2024; Zhu, 2025). Furthermore, the integration of visual and symbolic representation through painting may have provided an accessible and developmentally appropriate medium for children with limited verbal communication skills, thereby enhancing engagement and learning outcomes (Lu, 2022; Wright, 2023).

The significant improvement observed in the experimental group can also be explained through the theoretical framework of expressive art therapy, which emphasizes the role of creative processes in facilitating psychological integration and emotional regulation. According to Eisner (2002), artistic activities can serve as powerful tools for learning and self-expression, allowing individuals to construct meaning and process emotional experiences in non-verbal ways (Eisner, 2002). In line with this perspective, the present intervention enabled participants to externalize internal emotional states and experiment with adaptive responses in a safe and structured environment. Previous empirical studies have similarly reported that art therapy interventions can improve emotional expression, social behavior, and psychological well-being in individuals with ASD (Li et al., 2025; Ma & Cao, 2024). For instance, Li et al. (2025) demonstrated that drawing therapy based on embodied cognition principles enhanced both emotional expression and social behavior, suggesting that integrating sensory-motor processes with emotional learning can yield meaningful outcomes (Li et al., 2025).

Another important finding of the present study is the persistence of intervention effects at the follow-up stage. The maintenance of reduced autism symptoms two months after the completion of the program indicates that the acquired skills were not transient but were internalized and applied beyond the intervention context. This stability may be attributed to the repeated practice of emotion regulation strategies and the gradual reinforcement of adaptive behaviors throughout the sessions. Similar findings have been reported in studies examining the long-term effects of art-based interventions, which have shown sustained improvements in emotional and social functioning (Eo et al., 2022; Inci & Saglam, 2025). For example, Inci and Saglam (2025) found that interactive art activities not only reduced repetitive behaviors but also improved social skills and parental emotional responses, with effects persisting over time (Inci & Saglam, 2025). These results highlight the potential of art-based interventions as durable therapeutic approaches for children with ASD.

The reduction in autism symptoms observed in this study may also be partially explained by improvements in executive functioning and behavioral flexibility. Executive function deficits, including difficulties in cognitive flexibility and inhibitory control, have been strongly associated with repetitive behaviors and emotional dysregulation in children with ASD (Iversen & Lewis, 2021). The structured and goal-directed nature of the painting activities, which required participants to follow instructions, shift attention, and generate creative responses, may have contributed to the enhancement of these cognitive

processes. In turn, improved executive functioning could have facilitated greater behavioral flexibility and reduced reliance on stereotyped patterns of behavior. This interpretation is supported by previous research indicating that art therapy interventions can positively influence executive function and emotional security in children with ASD (Zhu, 2025).

In addition to cognitive and emotional factors, the multisensory nature of the intervention may have played a role in its effectiveness. Children with ASD often experience sensory processing difficulties, which can contribute to anxiety, repetitive behaviors, and social withdrawal (Bhat, 2021; Glod et al., 2019). Painting activities inherently involve tactile, visual, and proprioceptive inputs, which may support sensory integration and reduce sensory-related distress. By providing a structured yet flexible environment for sensory exploration, the intervention may have helped participants regulate their arousal levels and engage more effectively in social and emotional tasks. This aligns with findings from previous studies demonstrating that art therapy can improve sensory processing and motor skills in children with ASD (Sabet & GholamiHeidarAbadi, 2021).

The findings of the present study are also consistent with research highlighting the role of creative interventions in promoting social communication skills. Social deficits are a hallmark of ASD, and difficulties in initiating and maintaining interactions often stem from challenges in understanding and expressing emotions (Mammadova, 2025; Papaeliou, 2024). Through collaborative and guided activities, the intervention provided opportunities for participants to practice social communication in a supportive context. Although the sessions were conducted individually, the interaction with the therapist and the discussion of emotional content may have contributed to improved communicative competence. Previous studies have similarly reported that art therapy can enhance social communication and interaction skills in children with ASD (Bakhshi et al., 2018; Wright, 2023).

Furthermore, the reduction in repetitive behaviors observed in the experimental group can be interpreted in light of the relationship between anxiety, emotional dysregulation, and stereotyped behaviors. Research has shown that repetitive behaviors in ASD are often associated with heightened anxiety and intolerance of uncertainty (Glod et al., 2019; Russell et al., 2019). By equipping participants with strategies to identify and regulate their emotions, the intervention may have reduced the need for repetitive behaviors as coping mechanisms. This explanation is supported by findings from studies indicating that interventions targeting emotional processes can lead to decreases in stereotyped behaviors and improvements in adaptive functioning (Inci & Saglam, 2025).

5. Conclusion

Overall, the results of the present study provide empirical support for the effectiveness of emotion-focused painting interventions in reducing autism symptoms and enhancing emotional and behavioral functioning in children with high-functioning autism. The integration of cognitive–behavioral–emotional principles with expressive art techniques appears to offer a comprehensive and accessible approach to addressing the complex needs of this population. The findings also underscore the importance of incorporating creative and non-verbal modalities into intervention programs, particularly for individuals who may have difficulty engaging in traditional verbal therapies.

One limitation of the present study is the relatively small sample size, which may limit the generalizability of the findings to broader populations of children with autism spectrum disorder. Additionally, the use of a single measurement instrument for assessing autism symptoms may not capture the full range of changes in emotional, social, and behavioral domains. Another limitation is the reliance on parent-reported data, which may be subject to bias or variability in perception. Furthermore, the absence of long-term follow-up beyond two months restricts the ability to draw conclusions about the durability of intervention effects over extended periods. Finally, the study was conducted within a specific cultural and institutional context, which may influence the applicability of the findings to other settings.

Future research should aim to address these limitations by employing larger and more diverse samples, as well as incorporating multiple assessment tools, including observational measures and reports from teachers or clinicians. Longitudinal studies with extended follow-up periods are needed to evaluate the long-term effectiveness and sustainability of emotion-focused art therapy interventions. Additionally, future studies could explore the comparative effectiveness of different types of creative interventions, such as music therapy, drama therapy, or digital art programs, to identify the most effective modalities for specific subgroups of individuals with ASD. Investigating the mechanisms of change underlying these interventions, including the roles of executive functioning,

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sensory integration, and emotional processing, would also contribute to a deeper understanding of their therapeutic impact.

From a practical perspective, the findings of this study suggest that emotion-focused painting programs can be effectively integrated into rehabilitation and educational settings for children with high-functioning autism. Practitioners should consider incorporating structured art-based activities into intervention plans to enhance emotional awareness, regulation, and social communication skills. Training programs for therapists and educators should include components on the use of expressive art techniques and emotion-focused strategies to ensure effective implementation. Additionally, involving parents in the intervention process and providing them with guidance on supporting emotional development at home may further enhance the outcomes of such programs.

Authors' Contributions

Authors equally contributed to this article.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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