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Effectiveness of Mentalization-Based Training and Positive Thinking for Parents of Children with Autism on Their Reflective Functioning and Aggression in Their Children

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A B S T R A C T

Objective: This study aimed to determine the effectiveness of mentalization-based training and positive thinking for parents of children with autism on their reflective functioning and their children's aggression.

Methods: This quasi-experimental study employed a pretest-posttest design with a control group and a three-month follow-up. The statistical population included all parents of children with autism spectrum disorder (ASD) enrolled in day centers for education and rehabilitation of individuals with ASD in Tehran during the 2022-2023 academic year, and their children. A total of 32 parent-child pairs were selected using purposive sampling and were randomly assigned to either the experimental group (16 parents) or the control group (16 parents). Data collection tools for parents included the Reflective Functioning Questionnaire (Fonagy, 2016), and for children, the Achenbach Child Behavior Checklist Aggression Scale (2001) Parent Form. Initially, a pretest was administered to both groups, and the Aggression Scale was completed by the parents for their children. The mentalization-based and positive thinking training package (Fonagy) was then conducted in 12 sessions of 120 minutes each for the experimental group. Subsequently, a posttest was administered to both groups, and the Reflective Functioning Questionnaire and Positive Beliefs Questionnaire were completed by the mothers, while the Aggression Scale was again completed by the parents for their children. A follow-up phase occurred three months later. Data analysis was conducted using repeated measures analysis of variance.

Findings: The results indicated that the impact of mentalization-based and positive thinking training on the components of reflective functioning ($F = 14.35$) and aggression ($F = 7.17$) in children was significant ($P < 0.01$), and this effect persisted through the follow-up phase.

Conclusion: Given the results, it appears that mentalization-based and positive thinking training, by enhancing reflection on mental states, emotional regulation,

and the ability to enjoy pleasant events, provides a suitable context for reflective functioning. This, in turn, leads to a reduction in aggression in children with autism.

Keywords: *Mentalization-Based Training, Positive Thinking, Autism, Reflective Functioning, Aggression.*

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by behavioral impairments in social communication and the presence of repetitive and stereotyped behaviors. This condition significantly affects families, imposing considerable physical, psychological, and social stresses on them, especially on parents (Karna & Stefaniuk, 2024). Research indicates that parents of children with autism experience more severe stress compared to parents of healthy children or those with other developmental disabilities, with current global prevalence rates of ASD reported to be over 6% (Imani et al., 2022).

In recent years, supporting individuals with autism and their families has become an urgent priority for governmental organizations and service providers (Saini et al., 2015). It is evident that autism spectrum disorder has multifaceted and pervasive effects on the parents of children with the disorder. Eisenhower et al. (2005) found that the behavioral differences of children with ASD are significantly correlated with the daily stress levels reported by mothers (Eisenhower et al., 2005). Mothers of children with more behavioral dysfunctions report higher levels of stress. Additionally, sources of stress for parents of children with ASD may include difficulties in interacting with the child, marital conflicts, lack of necessary support for child care, and inadequate understanding of the child's needs by siblings and parents themselves (Rayan & Ahmad, 2018).

Overall, parents of children with autism spectrum disorder are highly vulnerable to various psychological and physical disorders, necessitating special attention for receiving therapeutic and educational interventions to prevent and treat these conditions (Costa et al., 2017). Training provided by specialists can help develop certain capabilities so that parents can effectively cope with psychological pressures in difficult situations. Some individuals struggle to recognize their own or others' mental states, while others can provide a rich, dynamic, and detailed description of their own and others' mental experiences. Such individuals are often able to provide a dynamic description of the relationship between their own mental states and those of others (Luyten et al., 2017).

Reflective functioning is a capacity essential for emotional regulation and managing high-pressure situations. Many of the challenges and stresses in the lives of parents of children with autism can undermine their reflective functioning abilities, affecting their behaviors and family and social relationships. Reflective functioning is another term for the mentalizing process. This process involves a type of mental activity that entails understanding and interpreting human behavior in terms of intentional mental states (thoughts, feelings, needs, desires, beliefs, and wishes). Consequently, this process enables understanding one's own and others' mental states and distinguishing between one's own and others' mental states and external realities (Fonagy & Luyten, 2009).

Mentalizing encompasses two dimensions: emotional versus cognitive mentalizing and implicit (automatic) versus explicit (controlled) mentalizing. This means that many individuals comprehend psychological states without engaging with the core emotional experiences, while some understand psychological states emotionally but cannot place them within a coherent cognitive framework. For some, this process is gradual, calm, and verbal, requiring attention, effort, reflection, and awareness. This type of mentalizing is controlled or explicit. For others, this process is rapid and requires little attention, intentionality, awareness, or effort. In most everyday social interactions, mentalizing is implicit, as it involves assumptions about one's own behavior, others' behavior, and oneself in relation to others. Explicit mentalizing is evident in individuals' verbal reasoning, while implicit mentalizing is reflected in their performance in non-verbal tasks (Liljenfors & Lundh, 2015).

Reflective functioning is an explicit manifestation of an individual's mentalizing capacity (Luyten et al., 2017). Mentalizing is introduced as the capacity to understand one's own and others' behavior through understanding underlying mental states and intentions and is presented as a human capacity essential for emotional regulation and establishing social relationships (Schultheis et al., 2019). This process, through which internal experiences, feelings, and beliefs come to mind, leads to the development of structures vital for self-regulation and managing emotions (Slade, 2005).

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Reflective functioning involves curiosity about mental states, efforts to understand these states and how they relate to behavior, and acceptance of mental states and their impact on behavior. It also assesses individuals who struggle to recognize the clarity of their own or others' mental states to understand what processes occur within them when they establish communication (Pazzagli et al., 2018). Reflective functioning can be depicted on a continuum from low to high. Emotional arousals disrupt reflective functioning from equilibrium, reducing mental flexibility, causing misunderstandings, and leading to the experience of negative emotions. Parents of children with autism spectrum disorder experience these conditions more than other parents, making it difficult for them to pay attention to and enjoy pleasant events.

Enjoyment is defined as "the capacity to notice, appreciate, and enhance positive experiences in life." Enjoyment refers to awareness of positive experiences and using positive emotion regulation strategies to enhance and extend the positive feelings derived from those experiences (Smith & Bryant, 2017). Behavioral problems and challenges in children with autism spectrum disorder affect mothers' reflection on internal states and their attention to and appreciation of pleasant situations. These behavioral problems are very common and pose serious risks to children and their families. These risks threaten physical, emotional, and social well-being and can impact their quality of life (Rozenblatt-Perkal & Zaidman-Zait, 2020).

Among these behavioral problems, aggression is more prevalent in children with autism spectrum disorder and can negatively impact family functioning, school performance, and social competence (De Giacomo et al., 2016). Aggression is defined as behavior likely to cause harm to a person. To prevent and address potential physical and psychological harm in parents of children with autism, appropriate training and interventions are essential. For example, parent training is an intervention aimed at changing children's disruptive and inappropriate behaviors. In this method, parents are taught new parenting skills, leading to improvements in children's behavior. The goal of parent training is to reduce functional deficits and improve the quality of life for children and their families (DiLalla & DiLalla, 2018).

As mentioned, various educational methods have been used to reduce behavioral problems in children with autism spectrum disorder. One of the intervention methods can be parent-focused. One of the best interventions that can be taught to mothers of children with autism spectrum disorder is mentalization-based training and positive thinking, which has shown numerous positive outcomes, including emotional regulation (Schultheis et al., 2019), parental sensitivity, increased resilience, stress tolerance, secure attachment, and improved emotional relationships between parents and children (Borelli et al., 2024; Borelli et al., 2023). Research has shown that utilizing the capacity for mentalizing is not easy, as this method encourages parents to find and correct mistakes, which can be challenging, especially when families are dealing with problems such as poverty, addiction, gender discrimination, disability, legal issues, and high stress levels. Therefore, some individuals may avoid participating in or continuing this type of training (Borelli et al., 2023).

Given that parents of children with autism spectrum disorder face issues such as disability, high stress levels, and other problematic situations, this study combined mentalization-based training with positive thinking, which was more pleasant and desirable. Unlike other approaches that focus on problems and weaknesses, the positive approach emphasizes increasing positive emotions and enhancing life's meaning. From the perspective of positive psychology, psychologists should not only think about solving people's problems but also help them achieve happier, richer, and more fulfilling lives. The goal of positive psychology is to accelerate a shift in psychology, focusing on enhancing quality of life rather than merely solving problems (Karwoski et al.).

The ability to mentalize is the capacity to understand the explicit and implicit mental situations and desires of oneself or others, related to self-regulation and the resulting relationships (Peters et al., 2021). Mentalizing refers to individuals' ability to understand themselves and others and how they are motivated by internal states such as feelings, desires, wishes, goals, and attitudes (Carvalho et al., 2020). Research in this area indicates that the lack of mentalizing capacity, which plays a crucial role in understanding one's own and others' mental states, can significantly contribute to the development of various psychiatric disorders, particularly borderline personality disorder, antisocial personality disorder, eating disorders, and depression. Alongside mentalizing, positive psychology focuses on the scientific study of positive emotions, individual strengths, and constructs that create positive changes in individuals (Einy et al., 2019).

In positive interventions, as in other interventions, a set of techniques is used, emphasizing effective foundations such as intimacy, proper empathy, initial trust, authenticity,

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and understanding. This perspective suggests that a lack of positive emotions, engagement, and meaning in life (all three being fundamental concepts of positive psychology) leads to psychological harm (Albehbahani et al., 2021). Therefore, the principles of positive thinking and mentalizing interventions share fundamental commonalities. Both interventions address relationships, intimacy, empathy, attachment, meaning, initial trust, understanding, and the regulation of positive and negative emotions. Moreover, considering the definitions of variables and reflective functioning, it can be concluded that to enjoy a pleasant event, individuals need awareness, attention, and reflection on the present moment, past, and future and their inner states. Thus, the capacity for reflective functioning, as a fundamental ability, was taught to enable individuals to reflect on pleasant moments and events from the past, present, and future.

Finally, the theoretical basis for the two methods of mentalizing and positive thinking is derived from attachment theory and the broaden-and-build theory of positive emotions, focusing on creating and maintaining secure relationships and the emotions present in safe experiences. In educational sessions, individuals are encouraged to recall times when they responded sensitively to others' attachment needs or when others responded to their attachment needs, and then explore and enhance the emotions associated with these experiences. In mentalization-based and positive thinking training, the main assumption is that in everyday life, most people experience small, safe moments that go unnoticed. This training emphasized and magnified positive moments overshadowed by daily worries and negative or surprising experiences (Hestbæk et al., 2022).

This is particularly important for individuals with insecure attachments, as their internal working models filter attachment experiences, focusing more on feelings of rejection, threats of abandonment, hostility, neglect, or criticism. Consequently, the history of early adverse attachment experiences prevents individuals from benefiting from the advantages of positive attachment experiences in the present and future. Therefore, one of the goals of combining mentalization-based and positive thinking training is to create opportunities to pay attention to safe experiences and deliberately focus on the meaning of these experiences, aiming to shift the internal working models of attachment relationships towards security and responsiveness to attachment needs.

The second theoretical framework is the broaden-and-build model of positive emotions, which posits that positive emotions not only signify momentary pleasure but also lead to optimal long-term functioning. Just as emotions like fear and anger prompt individuals to take defensive or protective actions by narrowing focus and attention, positive emotions expand the range of thought-action repertoires and build personal resources for the future (Fredrickson, 2005). As mentioned, the behavioral problems of children with autism spectrum disorder place considerable pressure and challenges on their parents' social, occupational, economic, marital, and even parenting relationships, threatening the parents' well-being and mental health. Given the aforementioned points and the fact that limited research has been conducted on mentalizing and positive thinking in parents of children with autism, which itself can be a research gap in this field, this study aims to address the following question:

- Does mentalization-based and positive thinking training for parents of children with autism affect their reflective functioning and their children's aggression?

2. Methods

2.1. Study design and Participant

The present study aimed to investigate the effectiveness of positive thinking and mentalization-based training on reflective functioning and positive beliefs of parents with children diagnosed with autism and aggression in children with autism. This quasi-experimental research was designed using a pretest-posttest control group design with a follow-up phase. In this section, a researcher-developed protocol for positive thinking and mentalization-based training was implemented for parents of children with autism in the experimental group, and data were collected using questionnaires. The sustainability of the obtained results was followed up three months after the study ended.

The statistical population of the study included parents of children with autism spectrum disorder (ASD) and their children, who were receiving education at daily education and rehabilitation centers for individuals with ASD in Tehran during the 2022-2023 academic year. The number of clients using services from these centers in Tehran was reported to be about 200. The sample size included 32 parents with children diagnosed with ASD and their children, who were randomly assigned to the experimental group (16 parents) and the control group (16 parents). Since random selection was not feasible in this study, purposive sampling was used to select the statistical sample. It is

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important to note that only the parents received the training, and the parent version of the Child Behavior Checklist aggression subscale was completed by the parents.

Inclusion criteria included completing the consent form to participate in the educational program and having their children benefit from educational services at the centers for at least one year. Exclusion criteria included simultaneous participation in other intervention and educational programs, absence, and unwillingness to continue cooperation in the program.

In this study, mentalization-based training (general model) was the foundation, and positive thinking sessions were conducted with a mentalizing stance (non-judgmental, curious, and exploratory). Although the concepts and techniques of both protocols were intertwined in most sessions, the integrated protocol was reviewed by 12 mental health experts for evaluation and feedback. They were asked to respond to five questions about each session and the entire protocol. The educational protocol was assessed through a set of questions on relevance, necessity, clarity, and simplicity of the content. To assess the level of agreement among the evaluators, the Lawshe method was used. In this study, the Lawshe score for all sessions and the entire protocol was above 0.65, and the content validity index was above 0.85. The structure and content of the mentalization-based and positive thinking training package included the main intervention areas: mentalization, positive and negative emotions, attachment, strengths, gratitude, forgiveness, a pleasurable life, and hope. This package was delivered in 12 two-hour sessions, once a week, to the participants (mothers of children with autism spectrum disorder).

2.2. Measures

2.2.1. Reflective Functioning

The Reflective Functioning Questionnaire (Fonagy, 2016) is a self-descriptive scale for measuring reflective functioning, developed by Fonagy et al. (2016) in a three-stage study to assess mentalization ability. The construct validity was examined using factor analysis, revealing two factors: confidence and lack of confidence regarding one's own and others' mental states. This questionnaire was administered and compared across clinical populations with borderline personality disorder, eating disorders, and non-clinical populations. Fonagy et al. (2013) reported internal consistency for the confidence and lack of confidence components as 0.77 and 0.66 in the clinical sample, and 0.63 and 0.67 in the non-clinical sample, respectively. Test-retest reliability over three weeks was reported as 0.84 for the lack of confidence component and 0.75 for the confidence component. The original questionnaire has 26 items and 2 subscales. The Reflective Functioning Questionnaire was standardized in Iran by Droger, Fathi Ashtiani, and Ashrafi (2020). These researchers reported Cronbach's alpha of 0.88 for the confidence factor and 0.66 for the lack of confidence subscale. Exploratory factor analysis in the Iranian population also revealed two factors, confidence and lack of confidence. Convergent validity was reported acceptable by correlating its subscales with the Mindfulness Scale, Adult Attachment Questionnaire, and Hospital Anxiety and Depression Scale (Einy et al., 2019). Cronbach's alpha in this study for reflective functioning was 0.82, 0.80 for the confidence component, and 0.76 for the lack of confidence component.

2.2.2. Aggression

The Child Behavior Checklist (CBCL) Parent Form from Achenbach's (2001) set of parallel forms assesses children's and adolescents' problems across 8 factors: anxiety/depression, withdrawal/depression, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggressive behavior. The rule-breaking behavior and aggressive behavior factors form the second-order factor of externalizing problems. This questionnaire assesses emotional-behavioral problems, as well as educational and social competencies of children aged 6-18 years from the parents' perspective and typically takes 20 to 25 minutes to complete. The questionnaire consists of 115 items related to various child behaviors, with responses on a 3-point Likert scale ranging from 0 to 2. A score of "0" is given for behaviors that never occur, "1" for sometimes occurring behaviors, and "2" for behaviors that often or always occur. The scale measures 8 emotional-behavioral syndromes: anxiety/depression, withdrawal/depression, somatic complaints, social problems, thought problems, attention problems (related to attention-deficit/hyperactivity disorder), rule-breaking behavior, and aggressive behavior (including items 3, 16, 19, 20, 21, 22, 23, 27, 37, 57, 68, 86, 87, 88, 89, 94, 95, 97, and 104). Additionally, it provides scores for internalizing problems, externalizing problems, and total problems. Internalizing problems include items from the withdrawal/depression, somatic complaints, and anxiety/depression subscales. Externalizing problems include items from the rule-breaking behavior and aggressive behavior subscales. Total problems include all

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items except items 2 and 4 (allergies and asthma). The CBCL can be completed by a parent or another knowledgeable person within 20 to 25 minutes and can be used to measure behavioral changes over time or following treatment. Cronbach's alpha for the total reliability of the CBCL forms is reported as 0.97, with test-retest reliability at 0.94. Content validity, criterion validity, and construct validity are reported to be satisfactory. Achenbach reported Cronbach's alpha reliability from 0.46 to 0.96, and 0.94 for the aggression scale. The CBCL was first translated and standardized in Iran by Tehrani Doust et al. (2002). Minaei's (2005) study reported internal consistency coefficients ranging from 0.63 to 0.95 using Cronbach's alpha. Temporal stability coefficients using test-retest method over 5-8 weeks ranged from 0.32 to 0.67. Agreement between respondents was also examined, with coefficients ranging from 0.09 to 0.67. Overall, Minaei's (2005) study concluded that this questionnaire has high reliability and validity for assessing emotional-behavioral disorders in children and adolescents aged 6-18 years (Albehbahani et al., 2021). Cronbach's alpha for the aggression scale in the present study was 0.73.

2.3. Intervention

2.3.1. Mentalization-Based and Positive Thinking Training

Session 1: Mentalization

Objective: Introduction to the positive attributes of individuals, establishing communication, presenting the chart and workshop trajectory, defining mentalization and its dimensions.

Session Description: Distribute questionnaires and address participants' questions, introduce the instructor and participants with two positive traits each, review rules and regulations, explore the concept of mentalization with examples, introduce and explain the dimensions of mentalization using concrete tools, differentiate misunderstandings from the mentalization stance, introduce components of accurate mentalization, and experience the "I don't know" stance along with curiosity and exploration through role play.

Session 2: Problems with Mentalization

Objective: Assess good and weak mentalization abilities and their consequences, recognize signs of weak mentalization.

Session Description: Review previous session's content and exercises, engage in activities to identify when mentalization fails and recognize signs of weak mentalization, discuss the consequences of weak mentalization in relation to oneself and others, examine the connection between mentalization, emotional arousal, and fight-or-flight responses.

Session 3: Emotions and Feelings

Objective: Understand and categorize types of emotions into two basic groups (primary and social) and introduce the seven primary emotions.

Session Description: Review previous session's content and exercises, participants identify different emotions which are categorized by the instructor into two groups, introduce the seven primary emotions based on Panksepp's theory, discuss the purpose, reasons, and importance of these emotions, and use films and pictures as educational aids.

Session 4: Emotional Mentalization

Objective: Identify, distinguish, and name emotions in oneself and others, and regulate emotions.

Session Description: Review previous session's content and exercises, answer how to identify emotions in oneself and others, introduce methods for recognizing emotions such as interpreting facial expressions and body language, pay attention to bodily signs of emotions, introduce mirror neurons and their functions, and introduce emotion regulation strategies such as mindfulness, meditation, and relaxation.

Session 5: Importance of Attachment Relationships

Objective: Explore the connection between attachment and emotions, emotion regulation, define attachment, and understand different attachment strategies and patterns in relation to parents and close ones.

Session Description: Review previous session's content and exercises, define attachment, explore the connection between emotions and attachment through participants' experiences, introduce different attachment strategies in response to emotional arousal, such as ambivalent, avoidant, and disorganized attachment.

Session 6: Attachment and Mentalization

Objective: Understand and recognize attachment conflicts within family members, comprehend the influence of attachment patterns on mentalization abilities.

Session Description: Review previous session's content and exercises, examine attachment with parents, recognize attachment conflicts as exaggerated or inhibited emotional states, explore the impact of attachment conflicts on listening, understanding, and empathy, identify attachment patterns and conflicts by discussing a close relationship where discussing a specific topic is challenging.

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Session 7: Strengths

Objective: Recognize and expand personal strengths.

Session Description: Review previous session's content and exercises, divide participants into pairs, share a childhood story that led to success, focus on character strengths and six human virtues, listen to the partner's story with a mentalization stance, curiosity, and identify character strengths in the partner's story, plan for utilizing and developing these strengths in the present.

Session 8: Gratitude

Objective: Cultivate awareness of blessings, express gratitude mentally and practically, and focus on emotions.

Session Description: Review previous session's content and exercises, count and write down blessings, detail and specify blessings, practice group gratitude, reflect on feelings during this practice, write and express gratitude towards someone or something that has positively impacted their life with a curious stance, present the written gratitude or express it verbally to the person and observe the emotions and impact.

Session 9: Forgiveness

Objective: Define injustice and harm, understand the internal states during harm and forgiveness.

Session Description: Review previous session's content and exercises, agree on the definition of injustice with real-life examples (Ms. Fang and Dr. Worthington), share experiences of harming someone and being forgiven, explore the benefits of forgiveness through participants' experiences with a mentalization stance.

Session 10: Forgiveness

Objective: Recall an experience of harm and undergo the process of forgiveness, understand and perceive the internal states of the harmed and the harmer.

Session Description: Share a minor relational harm (not too serious or deep) with details, focus on emotions throughout the incident, empathize and validate the harmed individual's experience, examine resentment to separate thoughts from feelings (resentment = anger + thoughts of revenge), use knowledge from sessions 4 and 5 and emotion cards to explore emotions, understand behavioral patterns in response to harm and emotional arousal, consider the dimensions and mental states of the harmed individual, recall the thoughts, feelings, and mental states of the harmer, decide on forgiveness, and if chosen, commit to it by writing a forgiveness letter.

Session 11: Savoring

Objective: Experience pleasurable activities in the present moment, practice one mindfulness exercise.

Session Description: Review previous session's content and exercises, read forgiveness letters as a pleasurable activity and focus on positive emotions in the forgiveness process, practice mindfulness with a raisin using the five senses, if time allows, practice breathing exercises and self-compassion, provide feedback on practical exercises.

Session 12: Optimism

Objective: Experience hope by examining difficult moments alongside pleasant ones.

Session Description: Review previous session's content and exercises, recall three situations where something was lost with a mentalization stance, and recall opportunities and successes that followed these losses with a mentalization stance focusing on emotions, thoughts, behaviors, summarize sessions, answer questions, collect feedback on the sessions, fill out questionnaires, thank participants, and bid farewell.

2.4. Data Analysis

Data analysis was performed using repeated measures analysis of variance (ANOVA) via SPSS-26.

3. Findings and Results

In this study, 16 parents of children with autism were included in the experimental group and 16 parents in the control group. The mean and standard deviation of the age of participating parents in the experimental group were 36.69 and 4.13 years, respectively, and in the control group, they were 38.06 and 3.70 years, respectively. In the experimental group, the education levels of parents were as follows: 3 parents had less than a high school diploma, 4 had a high school diploma, and 9 had education beyond a high school diploma. In the control group, 3 parents had less than a high school diploma, 7 had a high school diploma, and 6 had education beyond a high school diploma. The mean and standard deviation of the age of children with autism in the experimental group were 7.73 and 1.98 years, respectively, and in the control group, they were 8.62 and 2.27 years, respectively. In the experimental group, the gender distribution of children was 6 girls and 10 boys, while in the control group, it was 3 girls and 13 boys. Finally, in the experimental group, the level of disorder was 1 for 5 children, 2 for 10 children, and 3 for 1 child. In the control group, the level of disorder was 1 for 6 children, 2 for 6 children, and 3 for 4 children. Table 1 shows the mean, standard deviation, and Shapiro-Wilk index for parents' reflective functioning and children's aggression in the two

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groups at the three stages of pre-test, post-test, and follow-up.

Table 1

Mean, Standard Deviation, and Shapiro-Wilk Index for Parents' Reflective Functioning and Children's Aggression at Three Stages of Pre-test, Post-test, and Follow-up

Variable	Component	Group	Pre-test	Post-test	Follow-up
Mean and Standard Deviation	Reflective Functioning of Parents	Experimental	44.94 ± 7.95	65.20 ± 8.41	62.06 ± 10.13
		Control	47.31 ± 7.10	48.38 ± 7.28	48.63 ± 8.82
	Children's Aggression	Experimental	13.63 ± 2.83	9.13 ± 2.06	9.50 ± 2.45
		Control	13.31 ± 2.82	13.63 ± 2.42	13.31 ± 2.36
Shapiro-Wilk (Significance Level)	Reflective Functioning of Parents	Experimental	0.967 (0.790)	0.902 (0.087)	0.937 (0.316)
		Control	0.896 (0.068)	0.952 (0.520)	0.962 (0.697)
	Children's Aggression	Experimental	0.943 (0.394)	0.954 (0.555)	0.951 (0.507)
		Control	0.907 (0.105)	0.945 (0.419)	0.928 (0.228)

Table 1 shows that the mean scores of parents' reflective functioning in the experimental group increased in the post-test and follow-up stages compared to the control group, and the mean aggression scores of the children decreased. In contrast, no similar changes were observed in the control group in these stages. In this study, the Shapiro-Wilk values for the dependent variables for both groups at the three stages of pre-test, post-test, and follow-up were examined to test the assumption of normal distribution. As shown in Table 1, the Shapiro-Wilk index for neither of the dependent variables was significant in the two groups at the three stages. This indicates that the assumption of normal distribution of the data in the research groups was met. It is worth noting that the Levene's test was used to evaluate the assumption of homogeneity of error variances of the dependent variables among the groups, and the results showed that the variance of error scores for neither of the dependent variables in the groups and at the three research stages was significant. Therefore, it can be said that the assumption of homogeneity of error variances was met among the data. The assumption of homogeneity of covariance matrices of the dependent variables was examined using Box's M statistic and the assumption of sphericity or equality of error covariance matrices was tested using Mauchly's test, and the results are calculated.

The results showed that the value of Box's M statistic for neither of the dependent variables was significant. This indicates that the assumption of homogeneity of covariance matrices of the dependent variables was met. The results also showed that the chi-square value from Mauchly's test for parents' reflective functioning ($p = 0.001$) and children's aggression ($p = 0.029$) was significant. This finding indicates that the assumption of sphericity for the two dependent variables was not met, and therefore the degrees of freedom for these scores were corrected using the Greenhouse-Geisser method. After evaluating the analysis assumptions and ensuring their establishment, the data were analyzed using repeated measures analysis of variance. Table 2 shows the results of analysis of variance in testing the effect of mentalization-based and positive thinking training on parents' reflective functioning and children's aggression.

Table 2

Results of Repeated Measures ANOVA in Explaining the Effect of the Independent Variable on Parents' Reflective Functioning and Children's Aggression

Variable	Effects	Sum of Squares	Error Sum of Squares	F	P	η^2
Reflective Functioning of Parents	Group Effect	2081.34	3824.15	16.33	0.001	0.352
	Time Effect	1359.77	1674.59	24.36	0.001	0.448
	Group × Time Interaction	1686.44	2441.67	20.72	0.001	0.409
Children's Aggression	Group Effect	170.67	255.33	20.05	0.001	0.401
	Time Effect	68.06	190.88	10.70	0.003	0.263
	Group × Time Interaction	108.40	308.79	10.53	0.001	0.260

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Table 2 shows that the group × time interaction effect for parents' reflective functioning ($\eta^2 = 0.409$, $p = 0.001$, $F = 20.72$) and children's aggression ($\eta^2 = 0.260$, $p = 0.001$, $F = 10.53$) is significant. Table 3 shows the results of the Bonferroni post-hoc test for parents' reflective functioning and children's aggression scores in the two groups at the three stages.

Table 3

Bonferroni Post-hoc Test Results for Parents' Reflective Functioning and Children's Aggression

Dependent Variable	Comparison 1	Comparison 2	Mean Difference	Standard Error	Significance
Reflective Functioning of Parents	Pre-test	Post-test	-10.69	1.78	0.001
	Pre-test	Follow-up	-9.22	1.87	0.001
	Post-test	Follow-up	1.47	0.98	0.433
Children's Aggression	Pre-test	Post-test	2.09	0.63	0.007
	Pre-test	Follow-up	2.06	0.63	0.008
	Post-test	Follow-up	-0.03	0.42	1.00
Reflective Functioning of Parents	Experimental	Control	9.31	2.31	0.001
Children's Aggression	Experimental	Control	-2.67	0.60	0.001

The Bonferroni post-hoc test results in Table 3 show that the mean difference in scores for parents' reflective functioning and children's aggression in the pre-test to post-test and pre-test to follow-up stages are statistically significant, while the mean difference in scores for the post-test to follow-up stages is not significant. Additionally, the Bonferroni post-hoc test results comparing group effects in Table 3 show that the mean difference in parents' reflective functioning and children's aggression between the experimental and control groups is statistically significant. The mentalization-based and positive thinking training for parents of children with autism increased the mean reflective functioning of parents in the post-test and follow-up stages compared to the pre-test stage and decreased children's aggression.

4. Discussion and Conclusion

The aim of this study was to determine the effectiveness of mentalization-based and positive thinking training for parents of children with autism on their reflective functioning and their children's aggression. The results showed that mentalization-based and positive thinking training for parents of children with autism has an impact on their reflective functioning and their children's aggression. The findings of this study are consistent with the prior results (Carvalho et al., 2020; Einy et al., 2019; Fonagy & Allison, 2013; Fonagy & Luyten, 2009; Hauschild et al., 2023; Hestbæk et al., 2022; Liljenfors & Lundh, 2015; Pazzagli et al., 2018; Schultheis et al., 2019; Suchman et al., 2017; Zeegers et al., 2017). In explaining the results, it can be said that the more parents benefit from reflective functioning, the less parental stress they experience (Zeegers et al., 2017). Parental reflective functioning is an essential component for parental sensitivity and appropriate behavioral responses to the child's signals and messages, indicating how well a parent can appropriately and adequately react to the child's internal states (Sharp et al., 2006). This construct refers to the parent's ability to keep the child's inner life in mind, which helps the parent manage interactions with the child and understand the underlying thoughts and feelings. Parents with this ability establish healthier relationships with their children and show greater maternal stress tolerance. Such parents respond more to their child's emotional needs (Fonagy & Allison, 2013), and their relationship quality with the child is better (Rostad & Whitaker, 2016). Mentalization is a core aspect of human social functioning, as it allows the interpretation of interpersonal relationships. If parents possess reflective functioning in relation to their child, it facilitates the child's subsequent psychological, emotional development, and adjustment (Benbassat & Shulman, 2016).

In this study, by teaching the mentalization stance, i.e., a non-judgmental (I don't know) stance, curiosity, and exploration, we drew parents' attention to their and their child's inner psychological world. This helped them maintain balance in mentalization and respond appropriately in critical times. Additionally, parents better understood their child's needs, emotions, thoughts, and intentions behind behaviors, enabling them to manage aggression by regulating emotions and predicting aggression factors. This achievement was made without any training for parents on children's aggression, solely through mentalization and positive thinking training. Based on positive theory teachings, Fredrickson proposed the idea of upward spirals of well-being. He believes that when individuals experience

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negative emotions, it leads to pessimistic thinking, which further results in more negative emotions and may cause a downward spiral. Conversely, positive emotions open eyes and create more frequent and organized upward spirals of well-being, which are pleasurable events. In addition to pleasure, individuals are equipped with more coping skills. Thus, those experiencing more positive emotions often cope better with life's challenges and their resilience increases. Enhancing positive beliefs improves coping strategies for difficult conditions in parents of children with autism. Gratitude, savoring, and self-compassion generate positive emotions and create upward spirals of well-being, shifting the focus from problem-solving to strength-finding. Mindfulness for experiencing pleasure is essential and an act of self-kindness. Someone kind to themselves is also kind to others. Therefore, this training package aimed to help mothers and their children exit the downward spiral of negative emotions. The reported reduction in aggression by parents may be due to their lower sensitivity to the children's misbehavior and different labels assigned to these behaviors.

5. Suggestions and Limitations

The study was limited to sessions of mentalization-based and positive thinking training at one rehabilitation center. As the educational and rehabilitation programs at these centers were part-time and flexible, coordinating mothers for consistent participation was challenging, sometimes requiring class schedule changes, and some parents were excluded despite their interest. Consequently, this research program took considerable time. Based on the results, it is suggested that the mentalization and positive thinking educational protocol can be used by specialists in counseling centers, schools, and autism-specific rehabilitation institutions to enhance the mental health of parents of children with autism. Additionally, the mentalization and positive thinking educational protocol can be taught to students and enthusiasts in universities, institutions, and internship courses.

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.

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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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