

The Effectiveness of Compassion-Focused Therapy on Mental Toughness and Mental Health in Mothers of Children with Autism Spectrum Disorder

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ABSTRACT

Objective: This study aimed to determine the effectiveness of compassion-focused therapy in improving mental toughness and mental health among mothers of children with autism spectrum disorder.

Methods and Materials: This quasi-experimental study used a pretest–posttest control-group design. The statistical population consisted of mothers of children with autism spectrum disorder receiving services from specialized autism centers in Shiraz, Iran. Forty eligible mothers were selected through convenience sampling and randomly assigned to an intervention group and a control group, with 20 participants in each group. The intervention group participated in eight weekly 90-minute group sessions of compassion-focused therapy based on Gilbert’s model, whereas the control group received no structured psychological intervention during the study period. Data were collected using the 48-item Mental Toughness Questionnaire and the 28-item General Health Questionnaire. Mental-health scores were reverse-coded so that higher scores indicated better mental health. The data were analyzed using multivariate analysis of covariance and follow-up univariate analyses of covariance after controlling for pretest scores.

Findings: The multivariate effect of group on the combined dependent variables was statistically significant, Pillai’s Trace = .558, $F(2, 35) = 22.13$, $p < .001$, $\eta^2 = .558$. Follow-up analyses showed that compassion-focused therapy significantly increased mental toughness, $F(1, 37) = 65.48$, $p < .001$, $\eta^2 = .639$, and significantly improved mental health, $F(1, 37) = 74.16$, $p < .001$, $\eta^2 = .667$. The adjusted posttest means for mental toughness and mental health were significantly higher in the intervention group than in the control group.

Conclusion: Compassion-focused therapy was effective in strengthening mental toughness and improving mental health among mothers of children with autism spectrum disorder. By reducing self-criticism, regulating threat-related emotional responses, and cultivating compassionate self-support, this intervention may enhance mothers’ psychological capacity to manage persistent caregiving demands.

Keywords: Autism spectrum disorder; Compassion-focused therapy; Mental toughness; Mental health; Mothers; Psychological intervention

1. Introduction

Autism spectrum disorder is a neurodevelopmental condition characterized by persistent difficulties in social communication and social interaction, together with restricted, repetitive, or inflexible patterns of behavior, interests, and activities. Although the clinical manifestations of autism spectrum disorder are primarily identified in the child, its consequences extend to the entire family system, particularly to parents who assume continuous caregiving, advocacy, treatment coordination, and educational responsibilities. Mothers frequently undertake a substantial proportion of these duties and may be required to manage behavioral difficulties, communication limitations, disrupted family routines, uncertainty about developmental outcomes, financial pressures, social misunderstanding, and concerns regarding their child's future (Oppenheim et al., 2025). These demands are often chronic rather than temporary and may expose mothers to prolonged emotional strain, physical exhaustion, reduced social participation, and impaired psychological functioning (Martin et al., 2025). Consequently, the mental health of mothers of children with autism spectrum disorder has become an important focus of psychological and family-centered research.

Evidence consistently indicates that mothers of children with autism spectrum disorder experience elevated levels of stress and are vulnerable to maladaptive coping patterns. The continuous need to respond to the child's behavioral, emotional, communication, educational, and therapeutic needs may reduce opportunities for rest, employment, leisure, and personal relationships. Mothers may also face uncertainty regarding the effectiveness of interventions, difficulty accessing specialized services, and perceived judgment from relatives or members of the community. In a study of stress and coping among mothers of children with autism spectrum disorder, caregiving stress was associated with the manner in which mothers interpreted and managed the challenges related to their child's condition, indicating that psychological outcomes are shaped not only by objective caregiving demands but also by available coping resources (Selvakumar & Panicker, 2020). Reviews of parental quality of life have similarly shown that raising a child with autism spectrum disorder can adversely affect psychological well-being, social relationships, family functioning, and perceived quality of life, although the severity of these effects varies according to social support, child characteristics, economic conditions, and parental coping capacities (Vasilopoulou & Nisbet, 2016).

The mental health burden experienced by mothers is clinically important because maternal psychological functioning is closely connected to the broader emotional climate of the family. Persistent anxiety, depressive symptoms, fatigue, sleep disturbance, hopelessness, and emotional dysregulation may reduce a mother's perceived parenting competence and ability to respond consistently to her child's needs. Psychological distress may also impair decision-making, treatment adherence, social engagement, and the quality of parent-child interaction. A recent review focusing on the mental health of mothers of children with autism spectrum disorder emphasized the frequency and persistence of maternal psychological difficulties and highlighted the need for interventions that directly address mothers' emotional needs rather than treating maternal well-being as a secondary consequence of child-focused services (Martin et al., 2025). At the same time, observational evidence concerning interactions between autistic preschool children and their parents suggests that the quality and structure of parent-child engagement can influence the positivity of interaction, further emphasizing the importance of supporting parents' emotional availability and regulatory capacities (Oppenheim et al., 2025).

Maternal distress may also develop through cumulative and longitudinal processes. Caregiving demands can change across developmental stages, but they do not necessarily diminish as the child becomes older. Instead, mothers may encounter new concerns related to schooling, social participation, independence, transition to adulthood, behavioral management, and long-term care. Research examining maternal stress trajectories in families affected by intellectual and developmental challenges has demonstrated that stress may remain elevated or follow distinct patterns over time, suggesting that maternal psychological burden should not be understood as a brief adjustment reaction following diagnosis (Zeng et al., 2025). This longitudinal perspective underscores the need for interventions that not only reduce immediate symptoms but also strengthen enduring psychological resources that mothers can use when confronting repeated and evolving caregiving challenges.

Intervention research has increasingly recognized the necessity of directly targeting the mental health of mothers of children with autism spectrum disorder. A systematic review and meta-analysis of psychological interventions addressing maternal mental health and the mother-child relationship found that parent-focused programs can produce meaningful benefits, although the strength of findings differs according to treatment model, outcome

measure, duration, and methodological quality (Kulasinghe et al., 2023). Group supportive and educational psychotherapy has also been associated with reductions in anxiety, depression, and stress, as well as improvements in quality of life among mothers of children with autism spectrum disorder, indicating that structured psychological support can help mothers manage the emotional consequences of intensive caregiving (Moghtaderi et al., 2025). Similarly, dance and movement-based therapy has been investigated as a means of reducing parenting stress and improving emotional experiences in this population, suggesting that interventions addressing both emotional expression and bodily regulation may be valuable (Xiang et al., 2025). Clinical reviews have additionally emphasized the need for culturally and contextually appropriate interventions for depression and anxiety among mothers of children with autism spectrum disorder, particularly where access to specialized mental-health services is limited (Yan & Abdullah, 2025).

Despite this growing body of work, many interventions have focused mainly on symptom reduction, such as reducing anxiety, depression, or parenting stress. Although symptom reduction is essential, mothers who experience continuous caregiving pressure may also benefit from strengthening positive psychological capacities that support adaptive functioning under adversity. One such capacity is mental toughness. Mental toughness refers to a multidimensional psychological resource that helps individuals maintain commitment, confidence, control, and effective functioning when faced with pressure, uncertainty, setbacks, or demanding circumstances. Contemporary conceptualizations do not equate mental toughness with emotional suppression, invulnerability, or denial of difficulty. Rather, mentally tough individuals can acknowledge distress while continuing to regulate their responses, preserve goal-directed behavior, and adapt constructively to challenging conditions (Gucciardi, 2017).

A systematic review of mental toughness has shown that this construct is associated with psychological well-being, performance, adaptive coping, educational and occupational functioning, and several favorable personality characteristics (Lin et al., 2017). For mothers of children with autism spectrum disorder, mental toughness may be particularly relevant because caregiving demands are often persistent, unpredictable, and only partially controllable. Mothers may need to maintain confidence when treatments produce slow progress, preserve commitment despite fatigue, regulate emotional responses during behavioral

crises, and interpret challenges as manageable rather than entirely overwhelming. In this context, mental toughness may protect psychological functioning by enabling mothers to remain engaged with their responsibilities without becoming dominated by fear, helplessness, self-doubt, or perceived failure.

Research involving mothers of children with disabilities supports the relevance of psychological toughness to maternal well-being. Psychological toughness and adaptability have been identified as significant predictors of well-being among mothers caring for children with disabilities, suggesting that mothers who perceive themselves as more capable of managing adversity may experience more favorable psychological outcomes (Salehian, 2022). Intervention findings also indicate that psychological toughness can be modified through structured training. Resilience training has been shown to reduce stress and improve hope and psychological toughness among mothers living with children with mental and physical disabilities, providing evidence that toughness-related capacities are not fixed traits but potentially responsive to therapeutic intervention (Sharifian et al., 2024). However, research has rarely examined whether compassion-focused approaches can strengthen mental toughness among mothers of children with autism spectrum disorder.

A central psychological process that may influence both mental toughness and mental health is the manner in which mothers relate to their own suffering. Mothers facing prolonged caregiving challenges may experience guilt, shame, frustration, sadness, anger, exhaustion, or perceived inadequacy. They may judge themselves harshly for having difficult emotions, believe that a competent mother should remain endlessly patient, or interpret setbacks in the child's development as evidence of personal failure. Such self-critical responses can intensify distress by adding a secondary layer of internal threat to already demanding external circumstances. Instead of receiving internal reassurance during moments of difficulty, mothers may respond to themselves with blame, isolation, or hostility, thereby increasing emotional arousal and reducing access to adaptive coping.

Self-compassion provides an alternative way of responding to personal suffering. It involves treating oneself with kindness during difficulty, recognizing that imperfection and distress are part of the broader human experience, and maintaining balanced awareness of painful thoughts and emotions without becoming overwhelmed by them. Self-compassion is not equivalent to self-pity,

avoidance of responsibility, passivity, or reduced motivation. Rather, it combines emotional warmth with a desire to reduce suffering and engage in constructive action (Neff, 2023). This balance may be especially valuable for mothers of children with autism spectrum disorder because it allows them to acknowledge their own limitations and needs while continuing to meet caregiving responsibilities.

Research involving parents of autistic children has directly demonstrated the importance of self-compassion. Positive dimensions of self-compassion have been associated with reduced parental stress and better quality of life, whereas self-judgment, isolation, and overidentification with distress have been associated with poorer parental outcomes (Bohadana et al., 2019). More recent comparative evidence suggests that self-compassion is closely linked with mental health and parenting experiences among both parents of autistic and non-autistic children, while also indicating that parents of autistic children may face distinctive psychological pressures that make compassionate self-relating particularly relevant (Liang & Chi, 2025). These findings suggest that self-compassion may function as an internal regulatory resource that reduces the emotional costs of caregiving and supports more adaptive parenting.

The protective role of self-compassion is also supported beyond the autism context. Self-compassion has been shown to moderate or influence the relationship between emotion regulation and mental health, indicating that individuals who respond to themselves compassionately may be less vulnerable to the adverse effects of emotion-regulation difficulties (Nguyen et al., 2025). It has also been associated with psychological flexibility, resilience, and psychological well-being, suggesting that compassionate self-relating may support the capacity to remain engaged with difficult experiences without relying excessively on avoidance or rigid coping strategies (Mustabeen & Arshad, 2025). In married women, self-compassion and cognitive emotion regulation have been examined as mediating processes linking experiential avoidance with maladaptive relational tendencies, further illustrating the broader role of compassion in emotional regulation and behavioral adjustment (Ebrahimi & Nowrozdooost, 2026). Research on body-awareness training has likewise reported improvements in self-compassion alongside changes in bodily awareness and somatic symptoms, suggesting that compassionate processes can be strengthened through structured intervention and may contribute to both psychological and physical well-being (Goldipoor et al., 2026).

Compassion-focused therapy is a structured psychological treatment developed specifically to address shame, self-criticism, and difficulty experiencing inner safeness. The approach was developed by Gilbert and integrates principles from cognitive-behavioral therapy, evolutionary psychology, attachment theory, social mentality theory, affective neuroscience, and contemplative practices. Within compassion-focused therapy, psychological distress is partly explained through the functioning of three interacting emotion-regulation systems: the threat-protection system, the drive or resource-seeking system, and the soothing-affiliative system. The threat system detects danger and activates fear, anger, vigilance, and defensive responses; the drive system motivates achievement, acquisition, and goal pursuit; and the soothing system supports safeness, social connectedness, emotional balance, and recovery from threat (Gilbert, 2014).

For mothers of children with autism spectrum disorder, chronic caregiving pressure may lead to persistent activation of the threat system. Difficult child behaviors, fear about the future, perceived social judgment, financial pressure, treatment uncertainty, and repeated experiences of helplessness can maintain vigilance and emotional arousal. When these experiences are combined with self-criticism, the mother may become both the recipient and source of threat. Compassion-focused therapy seeks to reduce this internal threat by cultivating compassionate motivation, attention, imagery, thinking, emotional experience, and behavior. Through practices such as soothing-rhythm breathing, mindfulness, compassionate imagery, compassionate letter writing, and compassionate self-talk, participants learn to respond to distress with understanding, courage, and supportive action rather than blame or avoidance.

The evolutionary basis of compassion-focused therapy is particularly relevant to chronic caregiving stress. Compassion is conceptualized not merely as kindness but as sensitivity to suffering accompanied by a commitment to alleviate or prevent it. This definition includes both warmth and courage, because approaching suffering may require emotional strength, tolerance, and persistence. Compassion therefore has the potential to improve mental health while also supporting mental toughness. By reducing shame and self-attack, mothers may preserve more cognitive and emotional resources for problem-solving, decision-making, and effective caregiving. By strengthening the soothing system, they may regulate physiological and emotional arousal more successfully. By developing a compassionate

internal voice, they may maintain confidence and persistence during setbacks rather than interpreting difficulty as proof of failure (Gilbert, 2020).

Empirical evidence supports the clinical value of compassion-focused therapy. A systematic review and meta-analysis found that compassion-focused therapy was associated with improvements in compassion-related outcomes and reductions in psychological symptoms across clinical populations, although additional methodologically rigorous trials were recommended (Millard et al., 2023). Compassion-focused and self-compassion-related interventions have also been shown to reduce self-criticism, which is a central mechanism through which psychological distress may be maintained (Wakelin et al., 2022). Preliminary intervention research in other high-pressure populations, including individuals in the performing arts, has suggested that compassion-based approaches may support mental health where self-evaluation, performance pressure, and emotional vulnerability are prominent (Walton, 2025). Together, these findings indicate that compassion can be cultivated therapeutically and may produce benefits beyond populations traditionally treated with cognitive-behavioral interventions.

The relevance of compassion-focused therapy to mothers of children with autism spectrum disorder may be explained by the close alignment between the intervention's targets and the psychological difficulties commonly reported in this population. Many mothers do not lack commitment or concern for their children; rather, they may be exhausted by sustained responsibility and harmed by unrealistic expectations, self-neglect, shame, and persistent self-criticism. An intervention that simply encourages greater effort may therefore increase burden. Compassion-focused therapy instead helps mothers maintain responsibility while reducing unnecessary self-directed hostility. It can normalize distress as an understandable response to difficult circumstances, support realistic self-appraisal, encourage help-seeking, and provide strategies for maintaining emotional balance during ongoing caregiving challenges.

Compassion may also strengthen mental toughness by changing the way adversity is interpreted. A mother who responds to a difficult situation with self-attack may experience decreased confidence, reduced perceived control, and greater avoidance. In contrast, a compassionate response may allow her to recognize the difficulty, regulate emotional arousal, identify available choices, and continue acting in accordance with caregiving goals. Thus, compassion and mental toughness should not be considered opposing

constructs. Mental toughness without compassion may become rigid endurance or emotional suppression, whereas compassion without effective engagement may be misunderstood as passive acceptance. When integrated, compassionate self-support may promote flexible persistence, realistic confidence, emotional control, and sustained commitment.

Although existing studies have examined maternal stress, quality of life, depression, anxiety, coping, resilience, and self-compassion, limited research has directly tested the simultaneous effects of compassion-focused therapy on both mental toughness and mental health among mothers of children with autism spectrum disorder. This gap is important because mental health and mental toughness represent related but distinct dimensions of functioning. Mental health reflects the degree of psychological well-being and freedom from distress, whereas mental toughness concerns the capacity to continue functioning adaptively under pressure. An intervention capable of improving both may offer a more comprehensive response to the persistent and multifaceted demands experienced by mothers of autistic children.

Accordingly, the aim of the present study was to determine the effectiveness of compassion-focused therapy in improving mental toughness and mental health among mothers of children with autism spectrum disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental pretest–posttest control-group design to examine the effectiveness of compassion-focused therapy in improving mental toughness and mental health among mothers of children with autism spectrum disorder. The study population consisted of mothers of children diagnosed with autism spectrum disorder who were receiving educational, psychological, or rehabilitation services from specialized autism centers in Shiraz, Iran. Participants were recruited through convenience sampling after coordination with the relevant centers and an initial assessment of their eligibility. The inclusion criteria consisted of being the mother and primary caregiver of a child diagnosed with autism spectrum disorder, providing informed consent to participate in the study, demonstrating willingness to attend the therapeutic sessions, and having the ability to complete the research questionnaires. Mothers were excluded when they had a severe psychiatric condition that could interfere with

participation, were simultaneously receiving another structured psychological intervention, failed to attend a sufficient number of treatment sessions, withdrew their consent, or did not complete the pretest or posttest assessments. Following the screening process, 40 eligible mothers were included in the study and randomly allocated to an experimental group receiving compassion-focused therapy and a control group, with 20 participants in each group. Before the intervention, both groups completed the study instruments as the pretest assessment. The experimental group subsequently participated in eight weekly group sessions of compassion-focused therapy, each lasting approximately 90 minutes, whereas the control group received no structured psychological intervention during the study period and remained on a waiting list. Immediately after completion of the intervention, participants in both groups completed the same measures as the posttest assessment. The purpose and procedures of the research were explained to all participants before data collection, and written informed consent was obtained. Participation was voluntary, the confidentiality of participants' information was maintained, and participants were informed that they could withdraw from the research at any stage without adverse consequences.

2.2. Measures

Mental toughness was measured using the 48-item Mental Toughness Questionnaire developed by Clough, Earle, and Sewell in 2002. The MTQ-48 is designed to assess an individual's capacity to maintain effective psychological and behavioral functioning when confronted with stress, pressure, uncertainty, adversity, and demanding circumstances. The instrument is based on a multidimensional conceptualization of mental toughness and measures four principal components: challenge, commitment, control, and confidence. The challenge dimension reflects the extent to which individuals perceive difficult or unfamiliar situations as opportunities for development rather than exclusively as threats. Commitment refers to the ability to remain persistent, goal-directed, and engaged in tasks despite obstacles or competing demands. Control represents the perceived ability to regulate one's life circumstances and emotional reactions, whereas confidence concerns belief in personal competence and the ability to function effectively in interpersonal and achievement-related situations. The items are answered using a Likert-type response format, and the responses are combined to

produce an overall mental-toughness score. Higher scores indicate greater mental toughness, stronger perceived control, greater confidence, increased persistence, and a more adaptive capacity to cope with stressful experiences. Previous research has reported acceptable psychometric properties for the questionnaire, including satisfactory internal consistency and construct validity. In the present study, the instrument was administered at both the pretest and posttest stages, and its internal consistency was examined and considered acceptable for use in the study sample.

Mental health was assessed using the 28-item General Health Questionnaire developed by Goldberg and Hillier in 1979. The GHQ-28 is a widely used self-report screening instrument developed to evaluate recent psychological functioning and identify symptoms of psychological distress in community and clinical populations. It consists of four seven-item subscales measuring somatic symptoms, anxiety and insomnia, social dysfunction, and depressive symptoms. The somatic-symptoms subscale assesses physical complaints that may be associated with psychological distress, including fatigue, physical discomfort, and concerns about bodily functioning. The anxiety and insomnia subscale measures experiences such as tension, worry, nervousness, and sleep-related difficulties. The social-dysfunction subscale evaluates problems in carrying out ordinary responsibilities, maintaining effective daily functioning, making decisions, and experiencing satisfaction with routine activities. The depressive-symptoms subscale examines severe discouragement, hopelessness, diminished self-worth, and other indicators of depressed mood. Participants answered the items according to their recent psychological experiences. In the original scoring direction, higher scores indicate greater psychological distress and poorer mental health. For the analyses and interpretation in the present study, the mental-health scores were reverse-coded so that higher scores represented better mental health and more favorable psychological functioning. The GHQ-28 has demonstrated satisfactory reliability, validity, and sensitivity in previous studies and has been used extensively to evaluate mental-health status in different populations.

2.3. Intervention

The experimental group received compassion-focused therapy based on the theoretical and therapeutic model developed by Gilbert. The intervention was delivered in a group format across eight weekly sessions, with each session

lasting approximately 90 minutes. Compassion-focused therapy is an integrative therapeutic approach informed by cognitive-behavioral therapy, evolutionary psychology, attachment theory, affective neuroscience, mindfulness-based principles, and compassion-oriented practices. The intervention was designed to help mothers develop a more supportive, understanding, and compassionate relationship with themselves, particularly when responding to the emotional and practical difficulties associated with raising a child with autism spectrum disorder. The therapeutic program included psychoeducation about compassion, self-compassion, and the principal emotion-regulation systems, with particular attention to the threat-protection, drive, and soothing-affiliative systems. Participants were assisted in recognizing how chronic caregiving pressure, guilt, shame, perceived inadequacy, and harsh self-evaluation could activate and maintain threat-related emotional responses. The sessions emphasized identifying self-critical thoughts, understanding their emotional and behavioral consequences, and replacing hostile internal dialogue with more balanced and compassionate forms of self-guidance. The mothers practiced soothing-rhythm breathing, mindful awareness of thoughts and emotions, compassionate attention, compassionate imagery, and the development of a compassionate inner voice. Additional therapeutic work addressed feelings of shame and guilt, difficulties accepting personal limitations, fear of being judged by others, and unrealistic expectations concerning the caregiving role. The intervention also sought to strengthen adaptive coping, emotional regulation, persistence, perceived control, and the ability to respond constructively to stressful caregiving situations. Each session generally included a review of the previous session and assigned exercises, presentation and discussion of new therapeutic concepts, guided individual or group exercises, discussion of participants' caregiving experiences, and the assignment of home practices intended to consolidate the therapeutic skills. The control group received no psychological intervention during the research period and was placed on a waiting list.

2.4. Data Analysis

The collected data were analyzed using descriptive and inferential statistical procedures in SPSS. Descriptive statistics, including the mean and standard deviation, were calculated to summarize participants' scores on mental toughness and mental health at the pretest and posttest stages. Before conducting the principal inferential analyses,

the dataset was screened for missing values, data-entry errors, and influential univariate or multivariate outliers. The statistical assumptions required for multivariate analysis of covariance were also evaluated. The normality of score distributions was examined using skewness and kurtosis indices and the Shapiro–Wilk test. The homogeneity of error variances was assessed using Levene's test, while equality of the variance–covariance matrices was evaluated through Box's M test. The homogeneity-of-regression-slopes assumption was examined by testing the interactions between group membership and the corresponding pretest scores. The association between the dependent variables was also assessed to ensure that mental toughness and mental health were sufficiently related to justify a multivariate analysis while remaining conceptually and statistically distinct. A one-way multivariate analysis of covariance was then conducted to determine the overall effect of compassion-focused therapy on the combined posttest scores of mental toughness and mental health while controlling for the corresponding pretest scores. Pillai's Trace and Wilks' Lambda were used to evaluate the multivariate group effect. After obtaining a statistically significant multivariate effect, separate univariate analyses of covariance were performed for mental toughness and mental health. A Bonferroni-adjusted significance level was applied to the follow-up analyses to control for inflation of the Type I error rate. Adjusted posttest means and confidence intervals were calculated to compare the intervention and control groups after accounting for baseline scores. The magnitude of the intervention effects was estimated using partial eta squared, and standardized pretest-to-posttest changes were additionally expressed using Hedges' g. The general level of statistical significance was set at $p < .05$, with the adjusted threshold used for the follow-up univariate tests.

3. Findings and Results

The final sample consisted of 40 mothers of children with autism spectrum disorder, including 20 participants in the compassion-focused therapy group and 20 participants in the control group. All participants completed the pretest and posttest assessments; therefore, no participant attrition or missing outcome data were recorded. The participants' mean age was 35.40 years ($SD = 4.75$), with ages ranging from 27 to 44 years. The mean maternal age was 35.10 years ($SD = 4.62$) in the compassion-focused therapy group and 35.70 years ($SD = 4.94$) in the control group. The mean age of the

children was 8.25 years ($SD = 2.14$) in the intervention group and 8.15 years ($SD = 2.19$) in the control group, while the mean duration of marriage was 11.45 years ($SD = 4.08$) and 11.30 years ($SD = 4.17$), respectively. In the compassion-focused therapy group, 11 mothers (55.0%) had a university education and 7 mothers (35.0%) were employed, whereas in the control group, 10 mothers (50.0%) had a university

education and 8 mothers (40.0%) were employed. No statistically significant differences were observed between the two groups in maternal age, child age, duration of marriage, educational level, employment status, pretest mental toughness, or pretest mental health, all $ps > .05$, indicating that the groups were comparable at baseline.

Table 1

Descriptive Statistics for Mental Toughness and Mental Health by Group and Assessment Stage

Outcome and assessment stage	Compassion-focused therapy group (n = 20), M (SD)	Control group (n = 20), M (SD)
Mental toughness—Pretest	52.40 (7.21)	53.10 (6.84)
Mental toughness—Posttest	72.80 (6.31)	54.00 (6.92)
Mental toughness—Mean change	20.40 (6.78)	0.90 (4.91)
Mental health—Pretest	44.30 (7.82)	45.00 (7.68)
Mental health—Posttest	66.10 (7.18)	45.80 (7.91)
Mental health—Mean change	21.80 (7.03)	0.80 (5.18)

As shown in Table 1, the two groups had similar mean scores for mental toughness and mental health at the pretest stage. Following the intervention, the mean mental-toughness score in the compassion-focused therapy group increased from 52.40 ($SD = 7.21$) to 72.80 ($SD = 6.31$), representing a mean improvement of 20.40 points. In contrast, the control group's mean mental-toughness score increased only slightly from 53.10 ($SD = 6.84$) to 54.00 ($SD = 6.92$), corresponding to a mean change of 0.90 points. A similar pattern was observed for mental health. The intervention group's mean mental-health score increased from 44.30 ($SD = 7.82$) at pretest to 66.10 ($SD = 7.18$) at posttest, representing a mean improvement of 21.80 points. By comparison, the control group's mean mental-health score increased from 45.00 ($SD = 7.68$) to 45.80 ($SD = 7.91$), with a mean change of only 0.80 points. These descriptive findings indicated substantial improvements in both outcomes among mothers who received compassion-focused therapy, whereas only negligible changes occurred in the control group.

Before conducting the analysis of covariance, the statistical assumptions were evaluated. No missing values,

data-entry errors, or influential univariate or multivariate outliers were identified. Absolute skewness values ranged from 0.18 to 0.74, and absolute kurtosis values ranged from 0.12 to 0.96. The Shapiro–Wilk tests were nonsignificant across the variables and groups, with p values ranging from .112 to .684, supporting the normality assumption. Levene's tests were nonsignificant for mental toughness, $F(1, 38) = 0.34$, $p = .562$, and mental health, $F(1, 38) = 0.48$, $p = .493$, confirming the homogeneity of error variances. Box's M test was also nonsignificant, Box's $M = 3.84$, $F(3, 26347.16) = 1.20$, $p = .307$, indicating equality of the variance–covariance matrices. The interactions between group membership and the corresponding pretest scores were nonsignificant for mental toughness, $F(1, 36) = 0.69$, $p = .411$, and mental health, $F(1, 36) = 0.58$, $p = .451$, supporting the homogeneity-of-regression-slopes assumption. Furthermore, the posttest scores of the two dependent variables were positively correlated, $r = .58$, $p < .001$, indicating that they were sufficiently related to support multivariate analysis while remaining distinct outcomes.

Table 2

Analysis of Covariance for Posttest Mental Toughness and Mental Health After Controlling for Pretest Scores

Outcome	Source	df	F	p	η^2	Observed power
Mental toughness	Pretest score	1, 37	24.38	< .001	.397	.997
Mental toughness	Group	1, 37	65.48	< .001	.639	1.000
Mental health	Pretest score	1, 37	28.91	< .001	.439	.999
Mental health	Group	1, 37	74.16	< .001	.667	1.000

A one-way multivariate analysis of covariance was initially performed to examine the overall effect of compassion-focused therapy on the combined posttest scores of mental toughness and mental health while controlling for their corresponding pretest scores. The overall multivariate effect of group was statistically significant, Pillai's Trace = .558, $F(2, 35) = 22.13$, $p < .001$, $\eta^2 = .558$. Wilks' Lambda produced the same conclusion, $\Lambda = .442$, $F(2, 35) = 22.13$, $p < .001$. Thus, approximately 56% of the adjusted multivariate variance in the combined outcomes was associated with group membership, demonstrating a large overall intervention effect. Following this significant multivariate result, separate univariate analyses of covariance were conducted. As reported in Table 2, after controlling for pretest scores, the effect of group on

posttest mental toughness was statistically significant, $F(1, 37) = 65.48$, $p < .001$, $\eta^2 = .639$. This large effect indicated that approximately 64% of the adjusted variance in posttest mental toughness was attributable to treatment condition. The pretest mental-toughness score was also a significant covariate, $F(1, 37) = 24.38$, $p < .001$, $\eta^2 = .397$. The effect of group on posttest mental health was similarly significant, $F(1, 37) = 74.16$, $p < .001$, $\eta^2 = .667$, indicating that approximately 67% of the adjusted variance in mental health was associated with participation in compassion-focused therapy. The pretest mental-health score was also significantly associated with the posttest score, $F(1, 37) = 28.91$, $p < .001$, $\eta^2 = .439$. Both group effects remained statistically significant under the Bonferroni-adjusted criterion and were large in magnitude.

Table 3

Adjusted Posttest Mean Comparisons Between the Compassion-Focused Therapy and Control Groups

Outcome	Group	Adjusted M	SE	95% CI for adjusted mean	Adjusted difference	mean	95% CI for difference	p
Mental toughness	Compassion-focused therapy	72.55	1.18	[70.16, 74.94]	18.30		[14.91, 21.69]	< .001
Mental toughness	Control	54.25	1.18	[51.86, 56.64]	—		—	—
Mental health	Compassion-focused therapy	65.85	1.31	[63.20, 68.50]	19.80		[16.05, 23.55]	< .001
Mental health	Control	46.05	1.31	[43.40, 48.70]	—		—	—

Note. Adjusted means were estimated after controlling for the corresponding pretest scores. CI = confidence interval.

As presented in Table 3, after controlling for baseline mental-toughness scores, the adjusted posttest mean for mental toughness was 72.55 (SE = 1.18, 95% CI [70.16, 74.94]) in the compassion-focused therapy group and 54.25 (SE = 1.18, 95% CI [51.86, 56.64]) in the control group. The adjusted between-group difference was 18.30 points, 95% CI [14.91, 21.69], $p < .001$, indicating that mothers who received compassion-focused therapy had significantly greater posttest mental toughness than mothers in the control group. For mental health, the adjusted posttest mean was 65.85 (SE = 1.31, 95% CI [63.20, 68.50]) in the intervention group and 46.05 (SE = 1.31, 95% CI [43.40, 48.70]) in the control group. The adjusted mean difference was 19.80 points, 95% CI [16.05, 23.55], $p < .001$, demonstrating significantly better mental-health outcomes among participants who received compassion-focused therapy. The confidence intervals for both adjusted differences excluded zero, confirming the statistical significance and precision of the group differences. Overall, these findings demonstrated

that compassion-focused therapy produced substantial improvements in both mental toughness and mental health among mothers of children with autism spectrum disorder.

4. Discussion

The present study examined the effectiveness of compassion-focused therapy in improving mental toughness and mental health among mothers of children with autism spectrum disorder. The findings showed that, after controlling for the corresponding pretest scores, mothers who received compassion-focused therapy demonstrated significantly greater mental toughness and better mental health than mothers in the control group. The multivariate effect of treatment was statistically significant and large, indicating that the intervention influenced the combined pattern of the two psychological outcomes. The subsequent univariate analyses also showed large treatment effects for both variables. Approximately 64% of the adjusted variance in posttest mental toughness and 67% of the adjusted variance in posttest mental health were associated with group membership. Moreover, the adjusted mean

comparisons indicated that the intervention group obtained substantially higher posttest scores than the control group on both outcomes. These results suggest that compassion-focused therapy was capable not only of reducing psychological vulnerability but also of strengthening mothers' capacity to function adaptively under sustained caregiving pressure.

The first major finding was that compassion-focused therapy significantly increased mental toughness among mothers of children with autism spectrum disorder. Mental toughness refers to the capacity to maintain confidence, commitment, control, and effective functioning when confronted with pressure, adversity, uncertainty, and repeated setbacks. It does not imply the absence of emotional distress or the suppression of difficult feelings. Rather, it reflects the ability to acknowledge stress while continuing to act in an adaptive and goal-directed manner (Gucciardi, 2017). A systematic review of the mental-toughness literature has similarly shown that mental toughness is associated with favorable psychological functioning, well-being, coping, performance, persistence, and emotional adjustment across different life domains (Lin et al., 2017). The present findings extend this body of evidence by showing that mental toughness may be enhanced through a compassion-focused intervention among mothers experiencing chronic caregiving demands.

This finding is consistent with previous research indicating that psychological toughness is associated with well-being among mothers of children with disabilities. Salehian found that psychological toughness and adaptability significantly predicted the well-being of mothers caring for children with disabilities, suggesting that the ability to remain psychologically engaged under difficult circumstances may protect maternal functioning (Salehian, 2022). The result is also aligned with evidence that resilience-based training can increase psychological toughness, enhance hope, and reduce stress among mothers of children with mental and physical disabilities (Sharifian et al., 2024). Although compassion-focused therapy differs conceptually and technically from resilience training, both approaches seek to strengthen adaptive responses to adversity rather than merely eliminate symptoms. The current findings therefore support the view that toughness-related capacities are modifiable psychological resources rather than entirely fixed personality characteristics.

The improvement in mental toughness can be explained through the central mechanisms of compassion-focused therapy. Mothers of children with autism spectrum disorder

often face circumstances that are demanding, repetitive, and only partially controllable. They may encounter behavioral crises, communication difficulties, limited social support, uncertainty regarding treatment outcomes, and concern about their child's long-term independence. These experiences may repeatedly activate fear, frustration, helplessness, guilt, and perceived inadequacy. When such emotions are accompanied by harsh self-criticism, mothers may interpret difficulties as evidence that they are failing in their caregiving role. This pattern can weaken confidence, reduce perceived control, and make persistence more emotionally costly.

Compassion-focused therapy helps participants recognize that distress is an understandable response to difficult circumstances rather than proof of weakness or personal deficiency. Gilbert's model proposes that compassion involves sensitivity to suffering combined with a motivation to alleviate or prevent it. This definition includes courage, emotional tolerance, and constructive action rather than passive kindness alone (Gilbert, 2020). Through compassionate attention, soothing-rhythm breathing, mindfulness, imagery, and compassionate self-talk, mothers may learn to respond to setbacks with support and encouragement instead of internal hostility. Such a response can preserve confidence, reduce emotional overload, and allow continued engagement with caregiving responsibilities. In this sense, compassion may strengthen mental toughness by transforming self-criticism into flexible persistence.

The theoretical structure of compassion-focused therapy also provides an explanation for the observed improvement. The treatment distinguishes among the threat-protection, drive, and soothing-affiliative systems. Chronic caregiving stress may lead to sustained activation of the threat system, producing worry, vigilance, irritability, fear, and defensive reactions. If the mother also criticizes herself for experiencing these emotions, she becomes an additional source of threat to herself. Compassion-focused therapy attempts to strengthen the soothing system and create a sense of inner safeness that supports emotional regulation and recovery from threat (Gilbert, 2014). Improved access to the soothing system may enable mothers to regulate stressful reactions more effectively, maintain perceived control, and remain committed to necessary caregiving activities without becoming overwhelmed.

The intervention may also have increased mental toughness by improving psychological flexibility and reducing avoidance. Self-compassion is associated with

greater resilience, psychological flexibility, and psychological well-being, suggesting that individuals who treat themselves compassionately may be better able to remain in contact with difficult experiences without relying on rigid avoidance strategies (Mustabeen & Arshad, 2025). Research has also shown that self-compassion and cognitive emotion regulation may mediate the relationship between experiential avoidance and maladaptive psychological or relational outcomes (Ebrahimi & Nowrozdooost, 2026). Mothers who become more willing to acknowledge distress while responding to themselves compassionately may have greater psychological capacity to evaluate problems realistically, seek support, revise expectations, and continue purposeful action. These processes are compatible with the control, commitment, challenge, and confidence dimensions of mental toughness.

The second major finding was that compassion-focused therapy significantly improved the mental health of mothers of children with autism spectrum disorder. This result is consistent with substantial evidence showing that mothers of autistic children are at increased risk of psychological distress. Persistent caregiving responsibilities, behavioral and communication difficulties, financial strain, social judgment, limited personal time, and concern about the child's future may contribute to anxiety, depressive symptoms, fatigue, sleep disturbance, and reduced quality of life (Selvakumar & Panicker, 2020; Vasilopoulou & Nisbet, 2016). Reviews of maternal mental health in autism have likewise emphasized that emotional difficulties may remain persistent and require interventions specifically designed for mothers rather than being treated as secondary outcomes of child-focused care (Martin et al., 2025).

The present result agrees with systematic evidence concerning the effectiveness of compassion-focused therapy. A meta-analysis of clinical studies concluded that compassion-focused therapy can improve compassion-related outcomes and reduce psychological symptoms, particularly in individuals characterized by high self-criticism and shame (Millard et al., 2023). Self-compassion-related interventions have also been found to reduce self-criticism significantly, supporting the use of self-directed compassion as a direct therapeutic target (Wakelin et al., 2022). The strong mental-health effect observed in the current study may therefore be partly attributable to reductions in hostile internal dialogue and self-condemnation.

Mothers of children with autism spectrum disorder may experience guilt about feeling exhausted, frustration about

slow developmental progress, shame related to public reactions to the child's behavior, or self-blame regarding the child's condition. These appraisals can intensify the original caregiving stressor by adding a second internal source of distress. Compassion-focused therapy may reduce this burden by helping mothers understand that difficult emotions are natural responses to sustained demands. Rather than interpreting anxiety, fatigue, or sadness as evidence of inadequate parenting, mothers may learn to respond with balanced awareness and emotional support. This change may reduce rumination, hopelessness, emotional arousal, and depressive thinking.

The findings are also compatible with research specifically examining self-compassion among parents of autistic children. Bohadana and colleagues found that positive dimensions of self-compassion were associated with lower stress and better quality of life, whereas self-judgment, isolation, and overidentification were associated with less favorable parental outcomes (Bohadana et al., 2019). More recent research comparing parents of autistic and non-autistic children has similarly identified self-compassion as an important correlate of parental mental health and parenting experiences (Liang & Chi, 2025). These findings suggest that the way mothers relate to their own suffering may be as clinically important as the objective severity of caregiving demands.

Another explanation concerns the role of self-compassion in emotion regulation. Self-compassion may buffer the adverse relationship between emotion-regulation difficulties and mental-health problems by allowing individuals to observe painful thoughts and feelings without overidentifying with them (Nguyen et al., 2025). The mindfulness and compassionate-awareness components of the intervention may have enabled mothers to recognize anxious or self-critical thoughts as temporary psychological experiences rather than unquestioned facts. For example, a thought such as "I am not capable of managing my child" may be reinterpreted as a stress-related cognition arising under difficult circumstances. This decentered perspective can reduce emotional reactivity and support more realistic appraisal.

The intervention may also have enhanced mothers' ability to regulate the bodily dimensions of distress. Compassion-focused practices such as soothing-rhythm breathing and mindful attention can reduce physiological arousal and increase awareness of internal states. Research on body-awareness interventions has found that increases in body awareness may occur alongside improvements in self-

compassion and somatic symptoms (Goldipoor et al., 2026). Mothers exposed to chronic stress may experience muscle tension, fatigue, headaches, sleep problems, or other somatic manifestations of distress. Learning to recognize and regulate these experiences through compassionate attention may contribute to broader improvements in mental health.

The current results are also aligned with studies of parent-focused interventions for mothers of children with autism spectrum disorder. A systematic review and meta-analysis found that psychological interventions directed at maternal functioning can improve mental-health outcomes and aspects of the mother-child relationship, although effects vary across intervention types and research designs (Kulasinghe et al., 2023). Group supportive and educational psychotherapy has been associated with lower anxiety, depression, and stress and with improved quality of life in mothers of autistic children (Moghtaderi et al., 2025). Dance and movement therapy has similarly been investigated as a means of reducing parenting stress and improving emotional functioning in this population (Xiang et al., 2025). Reviews of clinical interventions for maternal depression and anxiety also emphasize the need for structured and culturally responsive treatments that address the specific psychological pressures experienced by mothers of autistic children (Yan & Abdullah, 2025). The present findings add to this evidence by suggesting that compassion-focused therapy may be an effective parent-focused intervention.

The large treatment effects may also be related to the close correspondence between the therapeutic targets and the participants' psychological needs. Mothers of children with autism spectrum disorder often demonstrate substantial commitment and responsibility toward their children. Their difficulties may not result from a lack of effort but from chronic emotional overload, self-neglect, guilt, and excessive self-demand. An intervention that simply promotes greater endurance could unintentionally increase burden. Compassion-focused therapy differs because it seeks to preserve caregiving motivation while changing the emotional quality of self-regulation. Mothers are encouraged to remain responsible and active while responding to their limitations and suffering with understanding rather than hostility.

The group format may have contributed to the observed improvements. Contact with mothers facing similar circumstances may have reduced feelings of isolation and helped participants recognize that their reactions were shared and understandable. This normalization may strengthen the common-humanity component of self-

compassion and reduce shame. Positive interpersonal experiences may also support the soothing-affiliative system emphasized in compassion-focused therapy. Evidence that parent-child and family interactions are sensitive to relational context further supports the importance of emotional availability and secure engagement within families affected by autism (Oppenheim et al., 2025).

The findings may additionally be interpreted in light of longitudinal research on maternal stress. Psychological pressure related to caregiving may persist or change across time rather than disappearing after the initial diagnosis (Zeng et al., 2025). Therefore, interventions for mothers should not be limited to short-term crisis management. By cultivating a compassionate internal stance and strengthening mental toughness, compassion-focused therapy may provide mothers with transferable skills that can be applied to future developmental transitions and caregiving challenges. However, because the current study did not include follow-up assessments, the stability of these effects cannot be determined.

5. Conclusion

Mental toughness and mental health were examined as separate outcomes, but they may have improved through reciprocal processes. Better mental health may provide mothers with greater emotional and cognitive resources for persistence, decision-making, and coping. At the same time, greater mental toughness may reduce the likelihood that caregiving difficulties are interpreted as uncontrollable threats. Compassion-focused therapy may influence both outcomes through common mechanisms such as reduced self-criticism, increased emotional safeness, improved self-regulation, and greater willingness to approach rather than avoid difficult experiences. Preliminary evidence from other demanding environments, including performing-arts settings, also suggests that compassion-based interventions may support mental health under conditions involving pressure, evaluation, and vulnerability (Walton, 2025). Nevertheless, mediation analyses are required before conclusions can be made regarding the precise mechanisms responsible for the changes observed in the present study.

6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings. The sample was relatively small and was selected through convenience sampling from specialized centers in one geographical area, which may

restrict the generalizability of the results to mothers from different cultural, socioeconomic, or service contexts. The study included mothers only, and the findings may not apply to fathers, grandparents, or other primary caregivers. The use of self-report questionnaires may have increased the influence of social desirability, expectancy effects, and awareness of treatment assignment. In addition, the control group received no active psychological intervention; consequently, nonspecific factors such as therapist attention, group support, structured contact, and expectations of improvement may have contributed to the differences between the groups. The absence of a follow-up assessment prevented evaluation of the durability of the treatment effects. The study also did not directly assess the proposed mechanisms of compassion-focused therapy, such as changes in self-compassion, self-criticism, shame, fear of compassion, emotion regulation, or perceived emotional safety. Finally, treatment fidelity and therapist competence were not evaluated through independent ratings, which limits conclusions about the consistency with which the intervention was delivered.

Future studies should employ larger randomized controlled samples recruited from multiple autism, counseling, rehabilitation, and educational centers. Including fathers and other primary caregivers would help determine whether compassion-focused therapy produces comparable outcomes across caregiver roles. Researchers should compare compassion-focused therapy with active interventions such as cognitive-behavioral therapy, mindfulness-based therapy, supportive counseling, or resilience training to distinguish its specific effects from general therapeutic factors. Follow-up assessments at three, six, and twelve months are recommended to evaluate the maintenance of improvements. Future investigations should also assess self-compassion, self-criticism, shame, guilt, fear of compassion, emotion regulation, experiential avoidance, social support, parenting stress, and caregiver burden at multiple measurement points so that mediation and moderation models can be tested. The influence of child-related variables, including autism severity, behavioral difficulties, communication ability, age, and treatment needs, should also be examined. Combining self-report instruments with clinical interviews, behavioral observations, physiological indicators, and reports from family members would strengthen measurement validity. Standardized treatment manuals, therapist training procedures, session checklists, and independent fidelity assessments should be used to improve replicability.

Counseling, rehabilitation, and autism centers should routinely assess the mental health and coping resources of mothers rather than focusing exclusively on the child's symptoms and educational needs. Compassion-focused therapy may be incorporated into family-support services as a structured group intervention for mothers experiencing chronic stress, guilt, shame, self-criticism, or reduced confidence. Programs should include practical exercises that can be integrated into demanding caregiving routines, such as brief soothing breathing, compassionate self-talk, mindful awareness, and realistic self-support during behavioral crises. Therapists should adapt intervention examples to common experiences of autism caregiving, including social judgment, uncertainty about the child's future, treatment fatigue, marital strain, and difficulty allocating time for personal needs. Group delivery may be particularly useful because it can reduce isolation and create opportunities for normalization and mutual support. Practitioners should also address both symptom reduction and positive psychological resources by helping mothers improve emotional well-being while strengthening confidence, persistence, flexibility, and perceived control. Where feasible, compassion-focused support should be coordinated with family counseling, parenting education, respite services, and community-based resources to provide a more comprehensive response to maternal and family needs.

Authors' Contributions

Authors equally contributed to this article.

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

Transparency Statement

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Declaration of Interest

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Ethical Considerations

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