




Comparison of the Effectiveness of Assertiveness Training and Logotherapy on Cognitive Emotional Regulation and Psychological Well-Being in Mothers of Children with Autism Spectrum Disorder

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Article Info

Article type:

Original Research

How to cite this article:

Barnameh, N., Bagheri, N., & Tanha, Z. (2024). Comparison of the Effectiveness of Assertiveness Training and Logotherapy on Cognitive Emotional Regulation and Psychological Well-Being in Mothers of Children with Autism Spectrum Disorder. *Applied Family Therapy Journal*, 5(2), 157-170.

<http://dx.doi.org/10.61838/kman.aftj.5.2.18>



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ABSTRACT

Objective: The present research aimed to compare the effectiveness of assertiveness training and Logotherapy on cognitive emotional regulation and psychological well-being in mothers of children with autism spectrum disorders.

Methods: The research design was a quasi-experimental pre-test post-test with a control group. The study population included all mothers of children with autism spectrum disorders in Tehran during the years 2022-2023. Sixty eligible individuals were randomly sampled into three groups: Experimental Group 1, Experimental Group 2, and a Control Group. The research variables were measured using the Gratz and Roemer (2004) Emotion Regulation Questionnaire and the Ryff (1989) Psychological Well-being Scale. Experimental Groups 1 and 2 received eight 2-hour sessions of Logotherapy and assertiveness training respectively, while the control group received no intervention during this period. Data analysis was conducted using SPSS software.

Findings: The results indicated that there was a significant difference in the effectiveness of assertiveness training and Logotherapy on cognitive emotional regulation among mothers of children with autism spectrum disorder ($p = 0.05$). There was also a significant difference in the effectiveness of assertiveness training and Logotherapy on the psychological well-being of these mothers ($p = 0.05$).

Conclusion: Therefore, it can be concluded that both assertiveness training and Logotherapy enhance cognitive emotional regulation, with Logotherapy being a more effective method for increasing psychological well-being compared to assertiveness training.

Keywords: Assertiveness training, Logotherapy, Cognitive emotional regulation, Psychological well-being.

1. Introduction

The birth of a child with a disease or disorder can challenge the peace and interactions among family members. The type of response from parents to such children plays a crucial role in creating a conducive environment for all family members (Azizmohammadi et al., 2019; Cooke et al., 2020). The presence of a child who is different from others in these families greatly complicates the care and sensitivity of parenting, affecting the integrated structure of the family and negatively impacting the mental health of parents, especially mothers (Mihandoust et al., 2021; Pastor-Cerezuela et al., 2020). According to reports, among all developmental disabilities and children with mental or exceptional disabilities, those with autism are in a more sensitive position, and this disorder imposes the highest level of psychological stress on parents, particularly mothers (Cooke et al., 2020).

Autism, or autistic disorder, is referred to as a pervasive developmental spectrum disorder, characterized by three main traits in those affected. These are impairments in socialization, communication deficits in verbal and non-verbal interactions, and restricted and repetitive behavior patterns (Azizmohammadi et al., 2019). Other features include abnormalities in eye contact, sensory processing issues, unusual dependency on objects, fixed daily routines, dietary and food selection challenges, unusual focus, self-harming behaviors like skin picking or biting of head and hands, and head banging (Johnson et al., 2019). Autism is classified into three levels based on the severity of impairment, where severity indicates the extent of disability in communication and social engagement (Hosseinzadeh et al., 2016). Accordingly, level one requires support from others, and at level three, the need for support and assistance reaches its maximum (Pastor-Cerezuela et al., 2020). Specifically, the first group includes individuals with severe social relational impairments, such as difficulties with non-verbal behaviors. The second group consists of those who lack adequate abilities to initiate or continue conversation or to engage in spontaneous play, and use language in a rigid, repetitive manner. Finally, the third group's features involve the use of restricted, repetitive, and stereotyped patterns in behavior and interests (Heydari & Meshkinyazd, 2022).

Parents of autistic children, unlike those with neurotypical children, must continuously pay attention to their child's unpredictable emotions and behaviors. Statistics show that typically over forty hours per week are spent on treatments for a child with an autism spectrum disorder

(Fami Tafreshi et al., 2016). Feelings of guilt over the child's abnormality, social withdrawal, decreased self-esteem, and depression threaten the mental health of mothers. Additionally, this disorder can impose a significant economic burden on families (Adibisede et al., 2018). These factors have led some families to perceive the diagnosis of autism in their children as highly unexpected and concerning, leading to denial of the condition. However, results from studies have proven the positive role of intensive early behavioral interventions in reducing autism-related disorders and alleviating psychological stress on families, particularly mothers (Feinberg et al., 2021). Furthermore, the psychological pressure on mothers of children with disabilities can lead to emotional instability and avoidance of interaction and response to their surroundings. Therefore, cognitive emotional regulation should be a focus for mothers of autistic children, enabling them to consciously control their emotions and thereby improve their quality of life (EmamDoost et al., 2020). Psychological well-being also includes factors that play a positive role in preventing or advancing cognitive-emotional and behavioral disorders in humans (Ryff, 1989; Ryff, 2018).

According to research, families with an autistic child face a wide range of problems (Totsika et al., 2011). They experience more stress and depression than other parents (Kim et al., 2016). Additionally, it has been reported that the stress levels in these parents are higher compared to those with children with intellectual disabilities and Down syndrome (Gray, 1997) and other disabilities (Rao & Beidel, 2009). Seo (2016) also reported that mothers of children with autism spectrum disorder have impairments in various areas such as life satisfaction, self-esteem, and mental health. These individuals are also prone to disorders such as depression, anxiety, and embarrassment (Riahi et al., 2012). Moreover, the presence of a disabled child in the family may prevent mothers from providing appropriate emotional responses to their children's behaviors (Kosari & Esmaeilinasab, 2018). Furthermore, mothers of disabled children face numerous tasks and problems and have lower psychological well-being. Thus, examining the factors that contribute to these disorders and helping to improve them can play a significant role in enhancing the living conditions of mothers with autistic children. So far, the implementation of various approaches such as drug therapy has not had a significant effect on improving this disorder, but various studies have shown that family-based therapeutic approaches and the organization of educational and

counseling programs for parents have played a significant role in improving the conditions of both the affected individuals and their parents (Rabiei et al., 2013). Additionally, assertiveness training is one of the skills that can play a significant role in improving the conditions of mothers with autistic children. This skill helps individuals increase their confidence and assert themselves appropriately in front of others (Forneris et al., 2007). The effectiveness of this therapeutic approach has been evaluated in a wide range of psychological disorders, and positive results have been reported. In a study conducted on patients with symptoms of irritable bowel syndrome, the positive effect of assertiveness therapy was noted (Shafiei Darb Asiyabi & Rahmati, 2012). Moreover, the effect of assertiveness therapy on self-esteem in female students and on stress, anxiety, and depression in high school students (Rabiei et al., 2013) has been reported. Another therapeutic method that can improve the living conditions of mothers with autistic children is Logotherapy. Logotherapy, by giving meaning to individuals' lives, can improve their psychological disorders. This therapeutic method has been widely used in various fields of psychology and has mostly been shown to be effective. Additionally, the positive effect of this method on improving hope in women with cancer (Baran Oladi et al., 2018; Mihandoust et al., 2021), individuals with spinal cord injuries (Baran Oladi et al., 2018), and male high school students (Souri, 2017) has been reported.

Is the effectiveness of assertiveness training and Logotherapy on cognitive emotional regulation and psychological well-being in mothers of children with autism spectrum disorder different?

2. Methods

2.1. Study design and Participant

The present study, aimed at the practical application of comparing the effectiveness of assertiveness training and Logotherapy on cognitive emotional regulation and psychological well-being of mothers with children diagnosed with autism spectrum disorder, employed a quasi-experimental design with a non-equivalent control group using pre-test and post-test measures. The statistical population included all mothers of children with autism spectrum disorders in Tehran for the years 2021-2022. The sample selection in the first step was based on a purposive or convenient sampling method, and in this context, several schools from among the autism schools in Tehran were

selected. Subsequently, using a convenient sampling method, 60 mothers of children with autism spectrum disorders were selected from the designated schools and were randomly assigned to one of three groups: Experimental Group 1, Experimental Group 2, and the Control Group. In other words, the entire sample consisted of 60 mothers, with each of the experimental and control groups comprising 20 participants. It is noteworthy that, according to Cohen and Manion (2001), the minimum sample size for experimental studies is considered to be at least 15 participants per group. The inclusion criteria for participants in this study were: mothers who have a child diagnosed with an autism spectrum disorder and those who exhibit problems with the dependent variables of the study, which include cognitive emotional regulation or psychological well-being. Participants must have consented and shown interest in participating in the study and not have severe psychological disorders like bipolar disorder or psychosis. The exclusion criteria included: participants withdrawing consent to continue cooperation; incomplete responses to the questionnaires; individuals who missed two-thirds of the sessions; and those receiving other treatments or interventions.

In line with the execution of the study, the necessary introductions and permissions from relevant institutions such as the Islamic Azad University of Borujerd and the Education Department of Tehran County were obtained. As mentioned earlier, after identifying all autism schools in Tehran and selecting some of them, the study sample was randomly determined and divided into two experimental groups and one control group. After completing the written informed consent forms by the participants, a full explanation of the study's purpose was provided, and confidentiality of all personal information and data obtained was ensured. The sessions for Logotherapy were conducted in 8 sessions of 2 hours each, and the sessions for assertiveness training were also held in 8 sessions of 2 hours each.

2.2. Measures

2.2.1. Difficulties in Emotion Regulation

This questionnaire, developed by Gratz and Roemer (2004), is designed to measure various aspects of emotion regulation. It is a self-report index used to evaluate difficulties in emotion regulation and consists of six subscales: non-acceptance of negative emotions, difficulties engaging in goal-directed behavior when distressed,

difficulties controlling impulsive behaviors when distressed, lack of an effective emotion regulation strategy, lack of emotional awareness, and lack of emotional clarity. The response range on this questionnaire is on a Likert scale from 1 to 5, where 1 indicates 'almost never' (0-10%), 2 'sometimes' (11-35%), 3 'about half the time' (36-65%), 4 'most of the time' (66-90%), and 5 'almost always' (91-100%). In scoring, the questionnaire includes a total score from the sum of all items and six subscale scores, where higher scores indicate greater difficulties in emotion regulation. Gratz and Roemer (2004) reported a reliability of above .93 for this questionnaire, with each of the six DERS scales having a Cronbach's alpha above .80. In the study by Sepehrian Azar et al. (2014), a total Cronbach's alpha of .89 was obtained (Sepehrian Azar et al., 2014).

2.2.2. Psychological Well-Being

The Psychological Well-Being Scale by Ryff was designed in 1989 and revised in 2002 (Ryff, 2018). This questionnaire consists of six components: 1-autonomy; 2-environmental mastery; 3-personal growth; 4-positive relations with others; 5-purpose in life; and 6-self-acceptance, and is available in a short version with 18 items and a long version with 84 items. The total score of these six components is calculated as the overall psychological well-being score. This test is a self-assessment tool answered on a six-point scale from 'strongly agree' to 'strongly disagree,' where a higher score indicates better psychological well-being, taking into account that some items are scored directly and some inversely. Ryff used Cronbach's alpha to assess the reliability of her scale. The results for the six components ranged from .86 for autonomy to .93 for self-acceptance, indicating good reliability of this questionnaire (Ryff, 2002). Additionally, the reliability and validity of this scale were confirmed in a study examining the factor structure of the Ryff Psychological Well-Being Scale among students at Urmia University (Michaeli Manec, 2010) and in a study assessing the factor structure and psychometric properties of the short form of the Ryff Psychological Well-Being Scale among male and female students (Khanjani et al., 2014).

2.3. Intervention

2.3.1. Assertiveness Training

Session 1: Introduction and Basic Concepts

The first session introduced the participants to the concept of assertiveness, explaining the differences between

assertive, passive, and aggressive behaviors. The facilitator provided examples and engaged the mothers in discussions about their own experiences with different communication styles.

Session 2: Recognizing Rights

This session focused on identifying and acknowledging personal rights. Mothers learned about their rights in various contexts, such as the right to express feelings and the right to say no without feeling guilty. Exercises included role-playing to practice these rights in hypothetical scenarios.

Session 3: Expressing Positive and Negative Feelings

Participants were taught techniques for expressing both positive and negative emotions constructively. They practiced expressing gratitude, appreciation, and dissatisfaction assertively, using "I" statements to communicate their feelings without blaming others.

Session 4: Setting Boundaries

The fourth session dealt with setting and maintaining personal boundaries. The mothers participated in activities that helped them recognize their own limits and the importance of communicating these boundaries to others, especially in stressful situations.

Session 5: Dealing with Criticism

Participants learned how to receive and respond to criticism assertively. Techniques such as fogging (agreeing with any truth in criticism without becoming defensive) and asking for clarification were practiced to help mothers manage and respond to criticism effectively.

Session 6: Assertive Request Making

The focus of this session was on making requests assertively. Mothers practiced how to ask for what they need or want clearly and directly, without being aggressive. Role-plays were used to simulate real-life situations where they might need to assert themselves.

Session 7: Handling Conflicts

In this session, strategies for handling interpersonal conflicts were introduced. Mothers learned negotiation skills and how to look for win-win solutions, applying these in role-playing exercises to practice maintaining assertiveness during conflicts.

Session 8: Review and Closure

The final session reviewed all the skills learned throughout the sessions. Participants shared their experiences and progress, discussing how they applied the assertiveness techniques in their daily lives. The facilitator provided feedback and discussed long-term strategies for maintaining assertiveness (Mofidi et al., 2016; Rabiei et al., 2013).

2.3.2. *Logotherapy*

Session 1: Introduction to Logotherapy

The initial session introduced Logotherapy, discussing its principles and the importance of finding personal meaning in life. Mothers were guided through introductory exercises to reflect on moments when they felt their lives were meaningful.

Session 2: Understanding Personal Values and Beliefs

This session helped participants identify their core values and beliefs. Activities included writing about things that matter most to them and discussing how these influence their daily interactions and feelings of worth.

Session 3: Recognizing Life's Purpose

Participants explored their life's purposes. Exercises were designed to help mothers articulate their goals and aspirations, understanding how these contribute to their sense of meaning and overall psychological well-being.

Session 4: Confronting and Accepting Reality

Mothers learned strategies for accepting the realities of their situation, including the challenges of raising a child with autism. The session included discussions on coping mechanisms and how acceptance can lead to a more meaningful and manageable life.

Session 5: Developing Positive Relationships

This session focused on the role of supportive relationships in enhancing life's meaning. Participants engaged in activities that emphasized empathy, understanding, and supportive communication within their personal and social relationships.

Session 6: Crafting a Personal Narrative

Mothers were guided to develop their personal narratives, focusing on resilience and positive aspects of their life

experiences. By writing and sharing their stories, they aimed to reframe their experiences to emphasize growth and meaning.

Session 7: Finding Strength in Adversity

Participants explored ways to find strength and meaning in adverse situations, particularly in the context of parenting a child with autism. The facilitator introduced techniques for seeing challenges as opportunities for personal growth and development.

Session 8: Consolidation and Future Planning

The final session provided an opportunity for mothers to consolidate what they had learned throughout the therapy and plan future actions to continue finding and enhancing meaning in their lives. They set personal goals and discussed strategies to sustain the gains made during the therapy (Baran Oladi et al., 2018; Mihandoust et al., 2021).

2.4. *Data Analysis*

After the last therapy sessions and completion of the interventions, the intended post-test was conducted for all three groups, and the effect of the pre-test was computed using the method of multivariate analysis of covariance (MANCOVA).

3. **Findings and Results**

The average age and standard deviation of participants in the assertiveness training group were 41.00 and 6.22 years, respectively, in the Logotherapy group were 40.00 and 5.83 years, respectively, and in the control group were 41.35 and 7.65 years, respectively.

Table 1

Descriptive Statistics of Research Variables

Variable	Group	Pre-test	Post-test	Follow-up
Non-acceptance of Emotional Responses	Assertiveness Training	4.54 ± 19.70	3.59 ± 14.15	3.60 ± 16.85
	Logotherapy	5.15 ± 19.65	3.14 ± 13.80	3.46 ± 14.10
	Control	5.02 ± 21.00	4.16 ± 21.35	4.64 ± 20.60
Difficulty in Goal-Directed Behavior	Assertiveness Training	3.20 ± 16.70	2.82 ± 12.40	2.37 ± 12.05
	Logotherapy	3.07 ± 15.20	2.54 ± 10.70	2.21 ± 11.55
	Control	3.52 ± 15.80	2.74 ± 15.15	2.98 ± 15.50
Impulse Control Difficulties	Assertiveness Training	5.07 ± 21.30	3.10 ± 14.60	2.95 ± 15.60
	Logotherapy	4.36 ± 20.85	2.78 ± 14.20	3.22 ± 13.05
	Control	4.11 ± 19.40	3.35 ± 19.55	3.86 ± 19.45
Lack of Emotional Awareness	Assertiveness Training	4.77 ± 20.05	2.92 ± 14.25	3.19 ± 15.45
	Logotherapy	4.60 ± 19.20	3.02 ± 12.40	2.52 ± 11.95
	Control	4.51 ± 18.65	4.62 ± 18.90	4.20 ± 19.65
Limited Access to Strategies	Assertiveness Training	6.68 ± 28.05	4.02 ± 19.45	4.73 ± 21.40

Emotional Clarity	Logotherapy	6.29 ± 27.55	4.11 ± 20.45	3.85 ± 19.45
	Control	6.24 ± 27.85	5.57 ± 26.80	5.40 ± 25.85
	Assertiveness Training	2.87 ± 16.45	3.18 ± 12.65	2.68 ± 12.45
Total Cognitive Emotion Regulation Score	Logotherapy	3.71 ± 15.80	2.46 ± 10.65	2.11 ± 10.35
	Control	3.62 ± 15.55	3.15 ± 15.85	3.07 ± 16.35
	Assertiveness Training	10.17 ± 122.25	9.32 ± 87.50	9.84 ± 93.30
Self-Acceptance	Logotherapy	13.58 ± 118.25	8.65 ± 82.20	9.36 ± 80.45
	Control	12.99 ± 118.25	9.12 ± 117.60	12.61 ± 117.40
	Assertiveness Training	1.80 ± 8.50	2.21 ± 12.15	2.04 ± 11.40
Positive Relations with Others	Logotherapy	1.69 ± 8.30	2.11 ± 13.60	2.14 ± 13.45
	Control	2.30 ± 8.60	1.99 ± 9.05	1.67 ± 8.60
	Assertiveness Training	1.54 ± 7.80	1.93 ± 11.35	2.21 ± 10.65
Autonomy	Logotherapy	1.54 ± 8.40	2.31 ± 12.80	2.41 ± 12.70
	Control	2.02 ± 7.20	2.20 ± 6.75	2.06 ± 6.85
	Assertiveness Training	2.18 ± 8.85	2.45 ± 11.90	2.50 ± 11.55
Environmental Mastery	Logotherapy	1.84 ± 8.85	2.52 ± 12.65	2.35 ± 12.05
	Control	2.83 ± 9.00	2.49 ± 8.10	2.76 ± 8.45
	Assertiveness Training	1.90 ± 8.85	2.45 ± 11.90	2.52 ± 11.60
Purpose in Life	Logotherapy	2.11 ± 9.65	2.46 ± 12.60	2.26 ± 13.20
	Control	1.97 ± 9.00	2.63 ± 8.90	2.31 ± 8.95
	Assertiveness Training	1.80 ± 7.25	2.68 ± 12.35	2.82 ± 11.60
Personal Growth	Logotherapy	2.25 ± 7.65	2.33 ± 14.20	2.44 ± 14.20
	Control	1.90 ± 6.19	1.90 ± 6.40	1.77 ± 6.75
	Assertiveness Training	1.97 ± 9.00	2.86 ± 11.55	2.21 ± 11.15
Total Psychological Well-Being Score	Logotherapy	1.65 ± 8.75	2.55 ± 12.10	2.85 ± 12.70
	Control	2.44 ± 8.40	2.27 ± 9.00	2.11 ± 8.45
	Assertiveness Training	8.01 ± 50.25	9.86 ± 71.20	8.53 ± 67.95
	Logotherapy	8.59 ± 51.60	8.67 ± 77.95	10.23 ± 78.30
	Control	9.28 ± 48.40	9.98 ± 48.20	7.96 ± 48.05

In this study, to test the hypothesis of normal distribution of data, Shapiro-Wilk's test was applied to the components and total scores of cognitive emotion regulation for each group at three stages: pre-test, post-test, and follow-up. To investigate the establishment/lack of the hypothesis of homogeneity of error variances among the components and total scores of cognitive emotion regulation and

psychological well-being among the groups, Levene's test was used. The sphericity condition or equality of covariance matrices was evaluated using Mauchly's test. After evaluating the hypotheses of the analysis and ensuring their establishment, the data were analyzed using a repeated measures analysis of variance.

Table 2

Results of Multivariate Analysis Test in Assessing the Effect of Independent Variables on Components and Research Variable Scores

Dependent Variable	Wilks' Lambda	F	df	p	η ²	Test Power
Non-acceptance of Emotional Responses	.770	3.90	4, 112	.005	.122	.890
Difficulty in Goal-Directed Behavior	.790	3.51	4, 112	.010	.111	.851
Difficulty in Impulse Control	.658	6.52	4, 112	.001	.189	.989
Lack of Emotional Awareness	.690	5.72	4, 112	.001	.170	.977
Limited Access to Strategies	.809	3.12	4, 112	.018	.100	.802
Emotional Clarity	.697	5.54	4, 112	.001	.165	.973
Total Cognitive Emotion Regulation Score	.337	20.22	4, 112	.001	.419	1.00
Self-Acceptance	.582	8.70	4, 112	.001	.237	.999
Positive Relations with Others	.449	13.78	4, 112	.001	.330	1.00
Autonomy	.541	10.07	4, 112	.001	.265	1.00
Environmental Mastery	.632	7.21	4, 112	.001	.205	.995
Purpose in Life	.439	14.25	4, 112	.001	.337	1.00
Personal Growth	.665	6.34	4, 112	.001	.185	.987
Total Psychological Well-Being Score	.277	25.17	4, 112	.001	.473	1.00

According to the results of the Table 2, the effect of the implementation of independent variables on the components of non-acceptance of emotional responses (Wilks' Lambda = .770, $\eta^2 = .122$, $p = .005$, $F = 3.90$), difficulty in goal-directed behavior (Wilks' Lambda = .790, $\eta^2 = .111$, $p = .010$, $F = 3.51$), difficulty in impulse control (Wilks' Lambda = .658, $\eta^2 = .189$, $p = .001$, $F = 6.52$), lack of emotional awareness (Wilks' Lambda = .690, $\eta^2 = .170$, $p = .001$, $F = 5.72$), limited access to strategies (Wilks' Lambda = .809, $\eta^2 = .100$, $p = .018$, $F = 3.12$), and emotional clarity (Wilks' Lambda = .697, $\eta^2 = .165$, $p = .001$, $F = 5.54$), as well as the total score for cognitive emotion regulation (Wilks' Lambda = .337, $\eta^2 = .419$, $p = .001$, $F = 20.22$) were significant. Furthermore, the effect of the implementation of independent variables on the component of self-acceptance (Wilks' Lambda = .582, $\eta^2 = .237$, $p = .001$, $F = 8.70$), positive relations with others (Wilks' Lambda = .449, $\eta^2 = .330$, $p = .001$, $F = 13.78$), autonomy (Wilks' Lambda = .541, $\eta^2 = .265$, $p = .001$, $F = 10.07$), environmental mastery (Wilks' Lambda = .632, $\eta^2 = .205$, $p = .001$, $F = 7.21$), purpose in life (Wilks' Lambda = .439, $\eta^2 = .337$, $p = .001$, $F = 14.25$), personal growth (Wilks' Lambda = .665, $\eta^2 = .185$, $p = .001$, $F = 6.34$), and the total psychological well-being score (Wilks' Lambda = .277, $\eta^2 = .473$, $p = .001$, $F = 25.17$) were also significant.

= .419, $p = .001$, $F = 20.22$) were significant. Furthermore, the effect of the implementation of independent variables on the component of self-acceptance (Wilks' Lambda = .582, $\eta^2 = .237$, $p = .001$, $F = 8.70$), positive relations with others (Wilks' Lambda = .449, $\eta^2 = .330$, $p = .001$, $F = 13.78$), autonomy (Wilks' Lambda = .541, $\eta^2 = .265$, $p = .001$, $F = 10.07$), environmental mastery (Wilks' Lambda = .632, $\eta^2 = .205$, $p = .001$, $F = 7.21$), purpose in life (Wilks' Lambda = .439, $\eta^2 = .337$, $p = .001$, $F = 14.25$), personal growth (Wilks' Lambda = .665, $\eta^2 = .185$, $p = .001$, $F = 6.34$), and the total psychological well-being score (Wilks' Lambda = .277, $\eta^2 = .473$, $p = .001$, $F = 25.17$) were also significant.

Table 3

Results of Repeated Measures Analysis of Variance Explaining the Effect of Independent Variables on Components and Total Scores of Research Variables

Variable	Effects	Sum of Squares	Error Sum of Squares	F	p	η^2
Non-acceptance of Emotional Responses	Group Effect	882.54	1006.70	24.99	.001	.467
	Time Effect	258.13	1197.15	12.29	.001	.177
	Group \times Time Interaction	293.16	2011.50	4.15	.004	.127
Difficulty in Goal-Directed Behavior	Group Effect	272.84	590.15	13.18	.001	.316
	Time Effect	246.53	486.65	28.88	.001	.336
	Group \times Time Interaction	136.69	802.90	4.85	.002	.145
Difficulty in Impulse Control	Group Effect	367.24	922.53	11.35	.001	.285
	Time Effect	603.01	787.18	43.66	.001	.434
	Group \times Time Interaction	442.66	1434.67	8.83	.001	.239
Lack of Emotional Awareness	Group Effect	622.81	1182.63	15.01	.001	.345
	Time Effect	392.41	909.28	24.60	.001	.301
	Group \times Time Interaction	440.26	1426.87	8.79	.001	.236
Limited Access to Strategies	Group Effect	682.14	1805.25	10.77	.001	.274
	Time Effect	935.21	1763.18	30.23	.001	.347
	Group \times Time Interaction	386.46	3008.60	3.66	.009	.114
Emotional Clarity	Group Effect	402.01	449.30	25.50	.001	.472
	Time Effect	249.41	569.08	24.98	.001	.305
	Group \times Time Interaction	252.62	1113.50	6.47	.001	.185
Total Cognitive Emotion Regulation Score	Group Effect	18322.63	9398.17	55.56	.001	.661
	Time Effect	15232.53	5588.35	155.37	.001	.732
	Group \times Time Interaction	10547.33	10450.03	28.77	.001	.502
Self-Acceptance	Group Effect	282.98	314.42	25.65	.001	.474
	Time Effect	216.01	227.18	54.20	.001	.487
	Group \times Time Interaction	171.16	372.43	13.09	.001	.315
Positive Relations with Others	Group Effect	598.71	422.07	40.43	.001	.587
	Time Effect	154.13	139.65	62.91	.001	.525
	Group \times Time Interaction	167.22	291.93	16.33	.001	.364
Autonomy	Group Effect	246.94	794.03	8.86	.001	.237
	Time Effect	95.41	150.18	36.21	.001	.388
	Group \times Time Interaction	143.52	234.07	17.48	.001	.380
Environmental Mastery	Group Effect	252.93	624.68	11.54	.001	.288
	Time Effect	130.21	155.83	47.63	.001	.455
	Group \times Time Interaction	93.13	281.77	9.42	.001	.248
Purpose in Life	Group Effect	984.08	450.90	62.20	.001	.686
	Time Effect	437.01	261.23	95.36	.001	.626
	Group \times Time Interaction	274.69	430.90	18.17	.001	.389
Personal Growth	Group Effect	215.41	597.90	10.27	.001	.265
	Time Effect	126.08	165.23	43.49	.001	.433

Total Psychological Well-Being Score	Group × Time Interaction	82.69	349.10	6.75	.001	.192
	Group Effect	14082.68	10755.30	37.32	.001	.567
	Time Effect	6468.01	1839.48	200.43	.001	.779
	Group × Time Interaction	5206.02	3243.50	45.74	.001	.616

Table 4

Results of Bonferroni Follow-up Test for Components and Total Scores of Research Variables (A)

Variable	Time Points	Mean Difference	Standard Error	p Value
Non-acceptance of Emotional Responses	Pre-test vs. Post-test	3.68	0.77	.001
	Pre-test vs. Follow-up	9.32	0.84	.003
	Post-test vs. Follow-up	-0.75	0.69	.843
Difficulty in Goal-Directed Behavior	Pre-test vs. Post-test	1.53	0.50	.001
	Pre-test vs. Follow-up	8.72	0.53	.001
	Post-test vs. Follow-up	-0.28	0.37	.001
Difficulty in Impulse Control	Pre-test vs. Post-test	4.04	0.71	.001
	Pre-test vs. Follow-up	4.84	0.68	.001
	Post-test vs. Follow-up	0.80	0.54	.001
Lack of Emotional Awareness	Pre-test vs. Post-test	1.24	0.71	.001
	Pre-test vs. Follow-up	6.23	0.73	.001
	Post-test vs. Follow-up	-0.40	0.46	.859
Limited Access to Strategies	Pre-test vs. Post-test	5.85	0.98	.001
	Pre-test vs. Follow-up	3.85	0.21	.001
	Post-test vs. Follow-up	2.00	0.80	.001
Emotional Clarity	Pre-test vs. Post-test	8.82	0.58	.001
	Pre-test vs. Follow-up	7.82	0.58	.001
	Post-test vs. Follow-up	1.00	0.56	.001
Total Cognitive Emotion Regulation Score	Pre-test vs. Post-test	82.23	7.81	.001
	Pre-test vs. Follow-up	53.22	8.11	.001
	Post-test vs. Follow-up	1.28	6.61	.001

Table 5

Results of Bonferroni Follow-up Test for Components and Total Scores of Research Variables (B)

Variable	Group A	Group B	Mean Difference	Standard Error	p Value
Non-acceptance of Emotional Responses	Assertiveness	Logotherapy	1.05	0.77	.530
	Assertiveness	Control	4.08	0.77	.001
	Logotherapy	Control	5.13	0.77	.001
Difficulty in Goal-Directed Behavior	Assertiveness	Logotherapy	1.23	0.59	.121
	Assertiveness	Control	1.77	0.59	.012
	Logotherapy	Control	0.03	0.59	.001
Difficulty in Impulse Control	Assertiveness	Logotherapy	1.13	0.74	.385
	Assertiveness	Control	2.30	0.74	.008
	Logotherapy	Control	3.43	0.74	.001
Lack of Emotional Awareness	Assertiveness	Logotherapy	2.07	0.83	.048
	Assertiveness	Control	2.48	0.83	.012
	Logotherapy	Control	4.55	0.83	.001
Limited Access to Strategies	Assertiveness	Logotherapy	0.48	1.03	.001
	Assertiveness	Control	3.87	1.03	.001
	Logotherapy	Control	4.35	1.03	.001
Emotional Clarity	Assertiveness	Logotherapy	1.58	0.51	.009
	Assertiveness	Control	2.07	0.51	.001
	Logotherapy	Control	3.65	0.51	.001
Total Cognitive Emotion Regulation Score	Assertiveness	Logotherapy	7.38	2.34	.008
	Assertiveness	Control	16.73	2.34	.001
	Logotherapy	Control	24.12	2.34	.001

Table 6

Results of Bonferroni Follow-up Test for Components and Total Scores of Research Variables (C)

Variable	Treatment Condition	Comparison Condition	Mean Difference	Standard Error	p Value
Self-Acceptance	Pretest	Posttest	-3.13	0.34	.001
	Pretest	Follow-up	-2.68	0.36	.001
Positive Relations with Others	Posttest	Follow-up	0.45	0.28	.323
	Pretest	Posttest	-1.50	0.29	.001
Autonomy	Pretest	Follow-up	-2.27	0.29	.001
	Posttest	Follow-up	0.23	0.30	.001
	Pretest	Posttest	-1.98	0.30	.001
Environmental Mastery	Pretest	Follow-up	-1.78	0.30	.001
	Posttest	Follow-up	0.20	0.17	.740
	Pretest	Posttest	-1.97	0.30	.001
Purpose in Life	Pretest	Follow-up	-2.08	0.30	.001
	Posttest	Follow-up	-0.12	0.26	.001
	Pretest	Posttest	-3.95	0.33	.001
Personal Growth	Pretest	Follow-up	-3.82	0.39	.001
	Posttest	Follow-up	0.13	0.34	.001
	Pretest	Posttest	-2.17	0.32	.001
Total Psychological Well-being	Pretest	Follow-up	-2.05	0.31	.001
	Posttest	Follow-up	0.12	0.33	.001
	Pretest	Posttest	-15.70	1.07	.001
Self-Acceptance	Pretest	Follow-up	-14.68	1.04	.001
	Posttest	Follow-up	0.02	0.80	.618
	Assertiveness	Logotherapy	-1.10	0.43	.039
Positive Relations with Others	Assertiveness	Control	1.93	0.43	.001
	Logotherapy	Control	0.03	0.43	.001
	Assertiveness	Logotherapy	-1.37	0.50	.024
Autonomy	Assertiveness	Control	0.03	0.50	.001
	Logotherapy	Control	0.37	0.50	.001
	Assertiveness	Logotherapy	-0.42	0.68	.001
Environmental Mastery	Assertiveness	Control	2.25	0.68	.005
	Logotherapy	Control	0.67	0.68	.001
	Assertiveness	Logotherapy	-1.03	0.60	.278
Purpose in Life	Assertiveness	Control	0.83	0.60	.011
	Logotherapy	Control	0.87	0.60	.001
	Assertiveness	Logotherapy	-1.62	0.51	.008
Personal Growth	Assertiveness	Control	3.95	0.51	.001
	Logotherapy	Control	1.57	0.51	.001
	Assertiveness	Logotherapy	-0.62	0.59	.904
Total Psychological Well-being	Assertiveness	Control	3.95	0.59	.005
	Logotherapy	Control	1.57	0.59	.001
	Assertiveness	Logotherapy	-6.15	0.41	.046
Total Psychological Well-being	Assertiveness	Control	7.78	0.41	.001
	Logotherapy	Control	6.07	0.41	.001

The Table 3 demonstrates the significant interaction effect of Group × Time for the components of non-acceptance of emotional responses ($\eta^2 = .127$, $p = .004$, $F = 4.15$), difficulty in goal-directed behavior ($\eta^2 = .145$, $p = .002$, $F = 4.85$), difficulty in impulse control ($\eta^2 = .239$, $p = .001$, $F = 8.83$), lack of emotional awareness ($\eta^2 = .236$, $p = .001$, $F = 8.79$), limited access to strategies ($\eta^2 = .114$, $p = .009$, $F = 3.66$), and emotional clarity ($\eta^2 = .185$, $p = .001$, $F = 6.47$), and the total score for cognitive emotion regulation ($\eta^2 = .502$, $p = .001$, $F = 28.77$). These findings indicate that

the implementation of assertiveness training and Logotherapy significantly affects these components and the total score of cognitive emotion regulation. Additionally, the significant interaction effect of Group × Time for the components of self-acceptance ($\eta^2 = .315$, $p = .001$, $F = 13.09$), positive relations with others ($\eta^2 = .364$, $p = .001$, $F = 16.33$), autonomy ($\eta^2 = .380$, $p = .001$, $F = 17.48$), environmental mastery ($\eta^2 = .248$, $p = .001$, $F = 9.42$), purpose in life ($\eta^2 = .389$, $p = .001$, $F = 18.17$), personal growth ($\eta^2 = .192$, $p = .001$, $F = 6.75$), and the total

psychological well-being score ($\eta^2 = .616$, $p = .001$, $F = 45.74$) demonstrates significant differences in the effect of one independent variable compared to another or the control group on these components and the total psychological well-being score.

The results of post-hoc tests indicate that the difference in the effect of assertiveness training and Logotherapy on the components of lack of emotional awareness ($p = .048$), lack of emotional clarity ($p = .009$), and total score of cognitive emotion regulation ($p = .008$) is significant. Specifically, compared to assertiveness training, Logotherapy has significantly reduced the mean scores of these two components and the total score of cognitive emotion regulation. Therefore, the hypothesis test three concluded that there is a difference in the effectiveness of assertiveness training and Logotherapy on cognitive emotion regulation in mothers of children with autism spectrum disorder, and Logotherapy is a more effective method than assertiveness training in improving cognitive emotion regulation in mothers of children with autism spectrum disorder. Additionally, there is a significant difference between the effects of assertiveness training and Logotherapy on the components of self-acceptance ($p = .039$), positive relations with others ($p = .034$), goal-directed behavior ($p = .008$), and the total score of psychological well-being ($p = .046$). Logotherapy, compared to assertiveness training, has increased the mean scores of self-acceptance, positive relations with others, goal-directed behavior, and the total score of psychological well-being more. Therefore, hypothesis test six concluded that there is a difference in the effectiveness of assertiveness training and Logotherapy on psychological well-being in mothers of children with autism spectrum disorder, and Logotherapy is a more effective method than assertiveness training in increasing psychological well-being in mothers of children with autism spectrum disorder.

4. Discussion and Conclusion

The present study aimed to compare the effectiveness of assertiveness training and Logotherapy on emotional cognitive regulation and psychological well-being of mothers with children diagnosed with Autism Spectrum Disorder (ASD). The results showed that there was a statistically significant difference in the mean scores of the components of emotional cognitive regulation (including non-acceptance of emotional responses, difficulties in engaging in goal-directed behaviors, impulse control

difficulties, lack of emotional awareness, limited access to strategies, and emotional clarity) between the assertiveness training group and the control group. Therefore, it can be concluded that assertiveness training has had an effect on the cognitive regulation of mothers with children diagnosed with ASD, and the hypothesis is confirmed. These results are consistent with prior findings (Abdolghaderi et al., 2021; Mofidi et al., 2016; Rabiei et al., 2013; Shafei Darb Asiyabi & Rahmati, 2012).

Assertiveness is considered one of the primary components of human relationships and plays a significant role in improving interpersonal relations and social interactions. An individual who is skilled in assertiveness can appropriately assert their rights in society. Such individuals can adequately express their feelings, thoughts, and emotions and defend their legitimate desires. Utilizing assertiveness skills is essential for various segments of society, especially mothers with children who have special needs. These mothers might find themselves in situations where they must express their feelings, thoughts, emotions, and defend their child's rights due to their child's special conditions. In such circumstances, if these mothers are equipped with assertiveness skills, they can easily manage their emotions and thoughts according to the situation, express their viewpoints and emotional responses correctly, and respond emotionally in ways that are appropriate to the context. Indeed, an individual who has learned proper self-assertion will, while accepting their positive and negative emotions, show more flexibility when exposed to various pleasant and unpleasant emotions and will provide a flexible and appropriate response to the emotions experienced (Abdolghaderi et al., 2021; Mofidi et al., 2016).

The results also indicated that there was a statistically significant difference in the mean scores of emotional cognitive regulation components between the Logotherapy and control groups. Thus, it can be said that Logotherapy improves emotional cognitive regulation in mothers with children diagnosed with ASD, and this hypothesis is confirmed. These results align with the prior research (Azizmohammadi et al., 2019; Baran Oladi et al., 2018; Heydari & Meshkinyazd, 2022; Mihandoust et al., 2021; Souri, 2017), showing that Logotherapy is effective in regulating emotional cognition. In explaining this hypothesis, it can be stated that positive and negative emotions are integral parts of life, significantly impacting life quality in all dimensions, including social and family aspects. Managing emotions can be achieved through adaptive and positive strategies or through maladaptive and

destructive ones. If a person uses adaptive strategies for regulating and managing their emotions, it will improve interpersonal relations, increase intimacy, and foster social adjustment. Conversely, employing strategies such as social withdrawal, rumination, or aggression to express emotions and feelings leads to relationship disruptions and numerous problems. One of the most effective emotional regulation strategies is the implementation of a Logotherapy training program. Logotherapy assists the individual in seeking meaning and purpose in life, thereby starting to act and safely navigate through life's adversities, rather than resorting to isolation and pessimism. Logotherapy reveals an individual's capacity to overcome difficulties, thereby improving their functioning (Baran Oladi et al., 2018; Heydari & Meshkinyazd, 2022). A person undergoing Logotherapy training will gain a deeper understanding of their true self and the surrounding world, find their place in life, and move toward higher goals. Logotherapy, as a positive therapeutic intervention focusing on the positive dimensions of human experiences and individual strengths, improves an individual's understanding of life. Consequently, such an individual, when facing unpleasant situations and negative emotions, will maintain inner peace, focus on positive emotions, and change their perception of their own and others' feelings and emotions, thereby displaying appropriate behavior and taking effective steps towards emotional regulation (Mihandoust et al., 2021).

Furthermore, results showed that the difference in the effect of assertiveness training and Logotherapy on the components of emotional cognitive regulation was statistically significant, indicating that Logotherapy, compared to assertiveness training, is a more effective method for improving emotional cognitive regulation in mothers with children diagnosed with ASD. This confirms the hypothesis. In explaining this hypothesis, it can be said that having a child is always a significant challenge for parents, especially when the child is diagnosed with disorders such as ASD. Children with autism face numerous challenges in establishing communication and social behaviors, significantly affecting the family, particularly the mother. Mothers with children diagnosed with ASD face considerable challenges in fulfilling their parenting roles, experiencing greater pressure than parents of typically developing children, which reduces their ability to manage their emotions, particularly negative ones. Supporting such mothers and teaching them essential skills has positive outcomes for both the mother and the child. For instance, if these mothers receive training in basic communication skills

such as assertiveness, they can express their views and desires respectfully and calmly in various situations, acknowledging others' wishes. Another training that helps these mothers better control their emotions and feelings is psychotherapy based on meaning. When an individual perceives life as a valuable gift that is purposeful and meaningful, their outlook on life changes. If mothers with autistic children can recognize and deeply understand the purpose and meaning of their life through Logotherapy training, they will overcome the difficulties of having such children and view these conditions as an opportunity for growth. In this way, they can react more calmly and without anxiety or stress, according to the emotions they experience.

The results indicate a significant difference between the effects of two methods of courage training and logotherapy on the components of psychological well-being. Accordingly, there is a difference between the effectiveness of courage training and logotherapy on the psychological well-being of mothers with autistic spectrum disorder children, and logotherapy is a more effective method compared to courage training in increasing psychological well-being in mothers with autistic spectrum disorder children, which confirms the hypothesis. In explaining this hypothesis, it can be said that mental health is one of the most important determinants of individuals' quality of life, which is influenced by various factors. If an individual cannot establish appropriate social connections with their surroundings or expand their social connections, they suffer from communication skills deficits. Such an individual needs training to improve their communication with the environment. Such individuals may express their desires reactively or aggressively, or respond to the demands of others, both of which involve deficits in expression, excess, and abdication. Courage training provides an opportunity for such individuals to express their desires while respecting the rights of others and respecting them. Such individuals feel satisfied by timely and appropriate expression of their feelings, thoughts, and needs, and thus take a significant step towards their mental health and well-being. Logotherapy is another intervention that can help individuals improve their mental well-being. When an individual focuses on their inner core, they recognize their internal resources and are able to flourish their potential towards achieving their goals in life. Such individuals believe that life has meaning in every condition and that there is a higher purpose in passing through hardships and difficulties. By changing their attitude towards difficulties, such individuals accept them with greater peace and enjoy higher levels of psychological well-

being and prosperity (Hashemizadeh et al., 2021; Mihandoust et al., 2021; Xun et al., 2021).

The mean scores for the components and the overall psychological well-being score increased following the implementation of the independent variables in the post-test and follow-up stages. Thus, assertiveness training improves the psychological well-being of mothers with children diagnosed with ASD, and this hypothesis is confirmed. These findings are consistent with the prior research (Besharat, 2012; Godarzi & Khojaste, 2020; May & Johnston, 2022; Perryman & Bowers, 2018), which showed that assertiveness training impacts mental health and psychological well-being. In explaining this hypothesis, it can be stated that families with children who have specific physical and mental problems, such as autism, face numerous challenges and issues that may affect their physical health and psychological well-being. Therefore, such families, especially mothers of these children, need training in skills that enhance their psychological well-being. Assertiveness training is a skill that helps the individual respect their values and thus, when facing problems, appropriately claim their rights and those of others. Mothers equipped with proper self-assertion skills can establish healthy verbal and non-verbal communications with others, reject inappropriate requests without guilt, and peacefully communicate their disagreement. Such individuals feel content and satisfied because they protect their rights and desires. Conversely, individuals lacking these skills impose additional responsibilities beyond their capacity on themselves or express their disagreement with the most intense reactions, all of which cause them to lose peace and be accompanied by anxiety, impulsivity, and moroseness, gradually inflicting irreparable damage to their well-being and psychological welfare over time.

5. Suggestions and Limitations

Given that the population of this study was exclusively mothers of children with Autism Spectrum Disorder (ASD) in Tehran, caution should be exercised when generalizing the findings to other communities. The limitations of this study included the timing of the research and the lack of long-term follow-up post-treatment at intervals such as 9 and 12 months. Information was collected using self-report questionnaires, which have their own limitations. Utilizing other tools, such as interviews, could enrich the collected data. Due to the COVID-19 pandemic and the need for social distancing to break the transmission chain, the researcher

faced challenges in conducting training sessions. It is recommended that future studies explore the effectiveness of therapeutic interventions such as self-compassion, positive thinking, life skills, and spiritual therapy on emotional cognitive regulation, resilience, life hope, and psychological well-being. Future research should also consider all family members who have a child with ASD, and compare the results with those of this study. It is suggested that future studies investigate the impact of Logotherapy and assertiveness training on other variables such as happiness, quality of life, social support, and psychological resilience. To verify the hypothesis of the effectiveness of assertiveness training on emotional cognitive regulation in mothers with children diagnosed with ASD, it is suggested that therapy sessions be held individually as well as in groups to allow mothers in similar circumstances to meet and discuss their feelings and experiences in caring for a child with ASD, sharing their emotions and experiences with each other. Additionally, it is suggested that during therapy sessions, the therapist should provide strategies for emotion regulation, such as problem-solving and expressing emotions. To support the hypothesis of the effectiveness of Logotherapy on emotional cognitive regulation in mothers with a child diagnosed with ASD, it is suggested that the number of educational sessions to find meaning and purpose in life for each of the mothers be increased. Furthermore, it is suggested that in order to help these mothers find the meaning of life, consulting with experienced psychologists, religious experts, and coaching specialists should also be utilized. To support the hypothesis of the effectiveness of assertiveness training on psychological well-being in mothers with a child diagnosed with ASD, it is recommended that various techniques for calming the mind, such as yoga and meditation, be used during therapy sessions to help maintain the mothers' peace of mind in difficult situations. Finally, to support the hypothesis of the effectiveness of Logotherapy on psychological well-being in mothers with a child diagnosed with ASD, it is suggested that during therapy sessions, the therapist should explain stress management techniques, awareness of triggers, and how to respond to them, and conduct related exercises with the mothers to enable them to manage their stress and thereby improve their psychological well-being.

Authors' Contributions

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

Declaration

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

Transparency Statement

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

Acknowledgments

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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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