

The Effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on Resilience, Happiness, and Ambiguity Tolerance in Mothers of Children with Autism

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ABSTRACT

The aim of this study is to investigate the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on resilience, happiness, and ambiguity tolerance in mothers of children with autism. The present research is applied in nature and employs a quasi-experimental design with pre-test, post-test, follow-up, and a control group. The statistical population of this study consists of all mothers of children with autism in the city of Rasht who visited the Gilan Autism Support Charity in 2023. A sample of 30 participants was purposefully selected. The intervention consisted of eight 90-minute sessions of MBCT training conducted in groups, twice a week, based on the method of Kabat-Zinn (2003). To collect data, the Connor-Davidson Resilience Scale (2003), the Oxford Happiness Questionnaire (1989), and the McLain Ambiguity Tolerance Scale (2009) were used. Data were analyzed using SPSS software. The results indicated that the MBCT intervention led to an increase in resilience and happiness scores in mothers of children with autism, but no improvement was observed in ambiguity tolerance scores. Given that resilience skills can be learned and that psychological interventions, including MBCT, can improve resilience by reducing negative emotions and fostering positive emotions, MBCT, through combining vitality and clear perception of experiences, can create positive changes in happiness.

Keywords: Mindfulness-Based Cognitive Therapy, resilience, happiness, ambiguity tolerance, autism

1. Introduction

The birth of a child is a beautiful and joyful process for the entire family and parents, despite the challenges and difficulties it may entail. However, when an exceptional child is born into a family, it brings various stresses that can be so overwhelming that the health of the entire family is at risk. Research indicates that parents of children with disabilities experience more problems related to health, stress, anxiety, depression, and feelings of deprivation compared to parents of healthy children (Levterova-Gadjalova & Fyodorova-Radicheva, 2024). One of the most common developmental disabilities occurring in childhood is Autism Spectrum Disorder (ASD). Autism Spectrum Disorder is a neurodevelopmental disorder characterized by deficits in social communication and interactions during early childhood, accompanied by restricted and repetitive behaviors and interests (Havdahl et al., 2021). This disorder is associated with persistent deficits in social communication and interactions across various contexts, including impairments in non-verbal communication behaviors and stereotypical repetitive behaviors (Xu & Ju, 2023).

According to the latest report by the Centers for Disease Control and Prevention (CDC) in the United States in 2023, the prevalence of autism is reported as one in every 36 children born (Buchholz et al., 2024). In Iran, based on information released by the Civil Registration Organization of Iran in May 2022, approximately 2,220,036 people were added to the population in the last two years. Based on an autism prevalence ratio of 1 in 150 individuals, it can be estimated that around 7,426 people are added annually to the population of individuals with autism in the country. This statistic also indicates that in 2023, 7,373 people were newly diagnosed (Azizi et al., 2024).

Autism Spectrum Disorder has a multifaceted and pervasive impact on the mental health of parents and other family members. Parents of children with ASD experience higher levels of parenting stress compared to parents of typically developing children or those with other developmental delays (Asgari Nejad & Habibi Asgarabad, 2021). Mothers often feel overwhelmed by the challenges of their children and endure severe psychological stress and anxiety, which jeopardizes their physical and mental health (Rios et al., 2020).

Having a child with autism can affect parental resilience (Shams & Kakabarayi, 2022). Resilience refers to the ability to withstand adversities and threatening circumstances and to achieve positive adaptation. Low resilience can lead to

physical and mental health problems and a decline in quality of life (Buchholz et al., 2024). Due to the higher levels of anxiety and parenting stress among mothers of children with autism, these mothers tend to experience lower resilience within their families (Spinelli et al., 2022). Resilience is nurtured by protective factors and hindered by risk factors. Protective factors aim to modify or change responses to adverse events, helping individuals avoid potential negative consequences. In contrast, risk factors increase the likelihood of adverse outcomes. Protective and risk factors are not fixed; they vary depending on the situation (Buchholz et al., 2024). In other words, most factors have both positive and negative aspects, placing them on a continuum of risk-protection. For instance, in an academic continuum, lower education levels are considered a risk factor, while higher education levels are considered a protective factor.

Happiness has gained attention in recent years due to its role in mental health (Burns & Crisp, 2022). Happiness can be viewed as a productive and positive mental and psychological evaluation that includes three main dimensions: positive affect, the absence of negative affect, and life satisfaction. Happiness is a fundamental human need and essential for life. It is based on personal perspectives and perceptions, stemming from positive experiences and life satisfaction. The concept of happiness has various definitions, as it is widely influenced by factors such as social structures, interactions, and personal beliefs (Kurt et al., 2023). Studies have shown that parents of children with autism report lower happiness and higher levels of depression compared to parents of typically developing children. They also exhibit significant depression relative to their decreased happiness levels (Kostiukow et al., 2021).

Another variable that mothers of children with Autism Spectrum Disorder may face is ambiguity tolerance (Taherabadi et al., 2020). Ambiguity tolerance refers to accepting uncertainty and the ability to live with incomplete knowledge about the environment, as well as the willingness to initiate independent activities without knowing if they will succeed (Abdollahi Bagherabadi & Karimi, 2022). A person's reaction to ambiguity in various areas of life influences many mental and behavioral aspects. In practice, an individual's perception of ambiguity can manifest in two concepts: opportunity and threat, and their responses may appear in forms of tolerance or intolerance. Some individuals may regard ambiguity as an inherent, unavoidable part of any problem and view it as an essential component of personal growth. Such individuals seek

ambiguity as an opportunity for growth and development, leading to greater ambiguity tolerance. In fact, these individuals achieve higher cognitive processing when dealing with ambiguous tasks (Chase, 2022). Research has shown that individuals with low ambiguity tolerance experience more psychological distress when facing ambiguous situations (Mealer et al., 2021). The study by Valizadeh and Ahmadi (2023) demonstrated that mothers of children with Autism Spectrum Disorder experience lower levels of ambiguity tolerance (Valizadeh & Ahmadi, 2023).

Given the variety of treatments in the field of Autism Spectrum Disorder and the psychological challenges faced by mothers of children with autism, Mindfulness-Based Cognitive Therapy (MBCT) is one such treatment. This therapy is a modern therapeutic approach whose effectiveness in relation to variables such as resilience (Hedayati Dana et al., 2023), happiness, and ambiguity tolerance (Valizadeh & Ahmadi, 2023) has been demonstrated. Mindfulness is a modern method of avoiding illusions and focusing on the present moment. It involves adopting a different perspective on the present and staying continually aware in the current moment (Griffith et al., 2023). Mindfulness enables individuals to transform previously unconscious or automatic thoughts and behaviors into observable phenomena occurring in their body or mind. This state is referred to as re-perception, meaning what was previously the subject becomes the object. Mindfulness practices include various forms of meditation, extended yoga, body scanning, and other exercises that demonstrate the connection between mood, thoughts, feelings, and bodily sensations. These exercises enable attention to bodily states and surroundings in the present moment and reduce automatic processing (Valizadeh & Ahmadi, 2023; Valizadeh & Parandin, 2022).

Research findings indicate that Mindfulness-Based Cognitive Therapy increases positive psychological variables such as happiness, resilience, and ambiguity tolerance (Valizadeh & Ahmadi, 2023; Valizadeh & Parandin, 2022), contributing to mental health and quality of life. Given the adverse effects of autism on mothers and the impact of family coping and adaptation on the development and abilities of children with Autism Spectrum Disorder, attention to the psychological issues, particularly resilience, happiness, and ambiguity tolerance, of these mothers is crucial. For instance, learning to be resilient can help family members overcome the stress and pressures associated with caring for children with autism (Asgari Nejad & Habibi Asgarabad, 2021). Based on the theoretical foundations of

Mindfulness-Based Cognitive Therapy and the importance of selecting mothers as the primary caregivers and individuals with the most interactions with their autistic children, Mindfulness-Based Cognitive Therapy appears necessary to address the health of these mothers. Furthermore, considering the psychological burden of caring for children with ASD, there is a growing need to focus on psychological well-being and employ new psychotherapeutic techniques. The findings of this research can open practical and research horizons for specialists. Specialists and counselors in this field can utilize the findings of the present research to enhance the capabilities of mothers of children with autism.

Thus, this study was conducted to examine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on resilience, happiness, and ambiguity tolerance in mothers of children with autism.

2. Methods and Materials

2.1. Study Design and Participants

The present study is applied in nature and utilizes a quasi-experimental design with pre-test, post-test, and follow-up, alongside experimental and control groups. The statistical population of this study consisted of all mothers of children with autism who visited the Gilan Autism Support Charity in Rasht in 2023. The sample size included 30 mothers of children with autism, who were purposefully selected and randomly assigned to either the experimental or control group. Inclusion criteria included age between 24 to 59 years, at least middle school education, willingness to participate, and having a child with autism aged 6 to 12 years. Exclusion criteria included absence from more than three sessions in the experimental group, severe behavioral problems during the sessions, and lack of cooperation in the group. Ethical considerations were addressed by explaining the research objectives honestly and obtaining informed consent from participants. The study received ethical approval with the code IR.PNU.REC.2024.070 from the Research Ethics Committee of Payame Noor University.

2.2. Measures

2.2.1. Resilience

The Connor-Davidson Resilience Scale (CD-RISC), developed by Connor and Davidson (2003), consists of 25 items measuring resilience on a five-point Likert scale ranging from 0 (not true at all) to 4 (true nearly all the time).

The minimum score is 0, and the maximum score is 100, with a mean score of 50. Connor and Davidson (2003) reported an internal consistency reliability of $\alpha = .89$ and a test-retest reliability of $r = .87$. Concurrent validity with the Kobasa Hardiness Questionnaire was reported as $r = .83$. Jokar and Sahragard (2007) confirmed the validity and reliability of this scale in the Iranian culture using factor analysis and reported a Cronbach's alpha of $\alpha = .73$ (Hedayati Dana et al., 2023; Shams & Kakaberaei, 2022). In the present study, reliability was calculated as $\alpha = .87$.

2.2.2. Happiness

This questionnaire was developed by Argyle and Lu (1989) and includes 29 items. Responses are scored on a four-point Likert scale (0 = A to 3 = D), with total scores ranging from 0 to 87. Higher scores indicate greater happiness. Argyle and Lu reported divergent validity with the Beck Depression Inventory (1988) and a Cronbach's alpha reliability of $\alpha = .90$. In a study by Souhani and Barghi Irani (2018), the Cronbach's alpha was reported as $\alpha = .93$. Alipour and Agah Harris (2007) examined the validity and reliability of this questionnaire in a sample of 369 participants and reported a Cronbach's alpha of $\alpha = .91$ (Valizadeh & Ahmadi, 2023; Valizadeh & Parandin, 2022). In the present study, reliability was calculated as $\alpha = .87$.

2.2.3. Ambiguity Tolerance

The McLain Ambiguity Tolerance Scale (2009) consists of 13 items. Participants respond to each item on a five-point Likert scale ranging from "strongly agree" to "strongly disagree." Individuals with scores above 45 are considered to have an appropriate level of ambiguity tolerance. McLain reported a Cronbach's alpha reliability of $\alpha = .82$. Feizi et al. (2013) reported construct validity as $r = .48$ and a Cronbach's alpha reliability of $\alpha = .85$. Baharvandi et al. (2020) reported a Cronbach's alpha reliability of $\alpha = .81$ for this instrument (Taherabadi et al., 2020). In the present study, reliability was calculated as $\alpha = .82$.

2.3. Intervention

2.3.1. Mindfulness-Based Cognitive Therapy

In this study, Mindfulness-Based Cognitive Therapy (MBCT) refers to eight 90-minute group therapy sessions conducted twice a week, based on the Kabat-Zinn method (2003) adopted by previous studies (Azizi et al., 2024;

Hedayati Dana et al., 2023; Valizadeh & Ahmadi, 2023; Valizadeh & Parandin, 2022).

Session 1: The therapist introduces themselves, sets the goals for the sessions, and establishes the rules. The focus is on building rapport and understanding the need for mindfulness training. The concept and importance of being present in the "here and now" are explained. Participants are introduced to mindful eating through the practice of eating a raisin with full awareness, bringing attention to the sensory experience of the moment.

Session 2: Participants are introduced to progressive muscle relaxation and engage in a body scan exercise, followed by ten minutes of mindful breathing. They practice becoming aware of their thoughts and feelings, with a focus on recognizing positive and negative emotions. Participants are also taught how to record positive events and encouraged to bring mindfulness into daily activities by paying full attention to routine tasks.

Session 3: The group practices "seeing and hearing" meditation as well as sitting meditation, which focuses on mindful awareness of breath and the body. A mindful walking exercise is introduced, followed by a three-minute breathing space practice to enhance awareness. Participants are instructed to keep track of challenging or unpleasant events in their daily lives.

Session 4: The session revisits the "seeing and hearing" meditation and extends the sitting meditation to include awareness of breathing, bodily sensations, sounds, and thoughts. The principles and rules governing emotions are introduced. The regular and coping three-minute breathing space exercises are incorporated to help participants manage emotional responses more effectively.

Session 5: The focus shifts to understanding how to respond to thoughts, feelings, and bodily sensations during the sitting meditation. The group practices both the regular and coping three-minute breathing exercises. A story, "The King and His Three Sons," is read to introduce the concept of acceptance, emphasizing the importance of accepting thoughts and feelings without judgment.

Session 6: Participants work on becoming fully aware of their thoughts and feelings, learning to accept them without judgment or direct intervention. The session includes a discussion on how thoughts are not necessarily reflective of reality. The three-minute regular and coping breathing spaces continue as daily practices to enhance emotional regulation.

Session 7: The focus is on changing moods and thoughts by treating thoughts as mere mental events rather than facts.

Participants are encouraged to allow both positive and negative thoughts to enter and leave their minds without judgment or deep focus. They create a list of enjoyable activities and those that promote a sense of mastery. The regular and coping breathing spaces are practiced.

Session 8: In the final session, the content of previous sessions is reviewed, and participants reflect on their increased awareness of happiness, ambiguity tolerance, and resilience. A body scan exercise is conducted for mindful reflection, and strategies for maintaining the skills learned and applying them to various life situations are discussed. Participants complete post-test questionnaires to assess the outcomes of the intervention.

2.4. Data Analysis

The data were analyzed using repeated measures analysis of variance via SPSS version 22.

Table 1

Descriptive Statistics

Variable	Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Follow-up Mean	Follow-up SD
Resilience	Experimental	15	45.12	4.25	66.43	5.38	65.89	5.12
	Control	15	46.07	4.09	47.18	3.98	46.79	3.88
Happiness	Experimental	15	36.54	5.89	59.32	6.21	58.72	5.92
	Control	15	37.12	5.34	37.85	5.47	37.55	5.29
Ambiguity Tolerance	Experimental	15	41.23	3.87	42.17	3.64	42.01	3.45
	Control	15	41.76	3.92	41.83	3.81	41.60	3.78

In Table 1, the descriptive statistics show that for the resilience variable, the experimental group had a significant increase from a pre-test mean of 45.12 (SD = 4.25) to a post-test mean of 66.43 (SD = 5.38), with a slight decrease during follow-up (M = 65.89, SD = 5.12). In contrast, the control group's resilience scores remained relatively stable across the three measurements. A similar pattern was observed for happiness, where the experimental group increased from a pre-test mean of 36.54 (SD = 5.89) to a post-test mean of 59.32 (SD = 6.21), and a slight decrease in follow-up (M = 58.72, SD = 5.92). The control group showed no significant changes. For ambiguity tolerance, the experimental group showed minimal changes (pre-test M = 41.23, SD = 3.87; post-test M = 42.17, SD = 3.64), while the control group remained stable throughout.

3. Findings and Results

Based on the research data, in the experimental group, 26.7% of the mothers were aged between 31 and 40 years, while 73.3% were over 40 years old. In the control group, 33.3% of the mothers were between 31 and 40 years old, and 66.7% were over 40 years old. In both the experimental and control groups, 93.3% of the mothers were married, and 6.7% were single. Additionally, in the experimental group, 60% of the mothers had a high school diploma, 13.3% had an associate degree, 20.1% had a bachelor's degree, and 6.7% had a master's degree. In the control group, 53.3% of the mothers had a high school diploma, and 46.7% had an associate degree.

Before conducting the analysis of variance (ANOVA), its assumptions were checked. The Shapiro-Wilk test was used to assess the normality of the score distributions. The results indicated that the assumption of normality was met ($P > .01$). To examine the homogeneity of variance errors, Levene's test was employed. The results of Levene's test showed that the error variances for resilience ($P = .431$, $F = .637$), happiness ($P = .438$, $F = .503$), and ambiguity tolerance ($P = .634$, $F = .551$) were not significant at the .05 level, confirming that the groups were comparable. An examination of the regression slope also indicated that the interaction between the pre-test and group was not significant ($P > .05$). Therefore, the use of the ANOVA model for the research data was deemed appropriate.

Table 2*Analysis of Variance (ANOVA) for Resilience, Happiness, and Ambiguity Tolerance*

Source	SS	df	MS	F	p	Partial η^2
Resilience						
Group	745.36	1	745.36	62.18	.001	.68
Time	1422.19	2	711.10	59.30	.001	.66
Group $\times$ Time	764.57	2	382.29	31.89	.001	.61
Error	542.21	56	9.68			
Happiness						
Group	603.54	1	603.54	45.11	.001	.59
Time	1381.64	2	690.82	51.73	.001	.64
Group $\times$ Time	524.35	2	262.17	19.63	.001	.55
Error	698.43	56	12.47			
Ambiguity Tolerance						
Group	8.49	1	8.49	1.19	.279	.02
Time	14.52	2	7.26	1.02	.365	.03
Group $\times$ Time	12.36	2	6.18	0.98	.374	.02
Error	352.75	56	6.30			

Table 2 presents the ANOVA results for the three variables. For resilience, there was a significant main effect of group ($F(1, 56) = 62.18, p = .001$, partial $\eta^2 = .68$), time ($F(2, 56) = 59.30, p = .001$, partial $\eta^2 = .66$), and a significant group $\times$ time interaction ($F(2, 56) = 31.89, p = .001$, partial $\eta^2 = .61$). A similar pattern was observed for happiness, with significant main effects for group ($F(1, 56) = 45.11, p = .001$,

partial $\eta^2 = .59$), time ($F(2, 56) = 51.73, p = .001$, partial $\eta^2 = .64$), and a significant interaction ($F(2, 56) = 19.63, p = .001$, partial $\eta^2 = .55$). However, for ambiguity tolerance, there were no significant effects for group ($F(1, 56) = 1.19, p = .279$), time ($F(2, 56) = 1.02, p = .365$), or the interaction ($F(2, 56) = 0.98, p = .374$), indicating no meaningful change in this variable.

Table 3*Bonferroni Post-Hoc Test for Resilience, Happiness, and Ambiguity Tolerance*

Comparison	Mean Difference	SE	p
Resilience			
Experimental Post-test – Pre-test	21.31	2.18	.001
Experimental Follow-up – Pre-test	20.77	2.14	.001
Experimental Post-test – Control	19.25	2.22	.001
Happiness			
Experimental Post-test – Pre-test	22.78	2.71	.001
Experimental Follow-up – Pre-test	22.18	2.63	.001
Experimental Post-test – Control	21.47	2.66	.001
Ambiguity Tolerance			
Experimental Post-test – Pre-test	0.94	0.47	.144
Experimental Follow-up – Pre-test	0.78	0.48	.211
Experimental Post-test – Control	0.34	0.46	.527

Table 3 shows the results of the Bonferroni post-hoc test. For resilience, the post-test mean of the experimental group was significantly higher than the pre-test ($M = 21.31, p = .001$) and follow-up ($M = 20.77, p = .001$). For happiness, there was a significant increase from pre-test to post-test ($M = 22.78, p = .001$) and from pre-test to follow-up ($M = 22.18, p = .001$). In contrast, there were no significant differences for ambiguity tolerance between the different time points, as

evidenced by non-significant mean differences across comparisons.

4. Discussion and Conclusion

The present study aimed to evaluate the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on resilience, happiness, and ambiguity tolerance in mothers of children with autism. The findings indicate that MBCT positively impacted these variables. These results align with

previous studies (Asgari Nejad & Habibi Asgarabad, 2021; Hedayati Dana et al., 2023; Mealer et al., 2021; Tang & Lee, 2021). The results suggest that MBCT significantly improves resilience in mothers of children with autism. This can be explained by the fact that resilience skills are teachable, and psychological interventions such as MBCT help transform vulnerability into resilience by reducing negative emotions and promoting positive ones. In essence, resilience is enhanced through cognitive understanding of problems and stressors, creative brainstorming, joint decision-making, negotiation, conflict resolution, focusing on attainable goals, learning from failure, preventing issues, and crisis management. Resilient individuals do not exhibit self-defeating behaviors, remain emotionally calm, and possess the ability to change stressful circumstances (Hedayati Dana et al., 2023; Mealer et al., 2021). Overall, resilience acts as an internal protective factor, helping individuals manage stress and achieve positive growth and balance, allowing them to better handle life's challenges.

Additionally, the results demonstrated that MBCT increased happiness in mothers of children with autism, which is consistent with prior studies (Valizadeh & Ahmadi, 2023; Valizadeh & Parandin, 2022). This finding indicates that mindfulness training effectively enhances happiness. Prior research shows that mindfulness training reduces mental and emotional health threats such as depression, anxiety, and stress (Valizadeh & Ahmadi, 2023), while increasing positive psychological components such as happiness. Consequently, MBCT promotes mental health, happiness, and a higher quality of life for mothers of children with Autism Spectrum Disorder (ASD). By combining vitality with clearer perceptions of experiences, MBCT can create positive changes in happiness. Practicing mindfulness increases individuals' tolerance for negative emotional states and empowers them to cope effectively, thus enhancing happiness in mothers of children with ASD (Valizadeh & Parandin, 2022). Continuous mindfulness practice increases awareness of one's body, emotions, and thoughts. Through exercises like mindful breathing, body scanning, and seated meditation, individuals learn to observe thoughts, emotions, and feelings as temporary and passing, leading to a state of relaxation and calmness. These practices extend to daily life, fostering a non-judgmental acceptance of unpleasant events rather than reactive or sudden responses, which often result in burnout. This heightened awareness brings positive outcomes such as mental calmness and happiness (Valizadeh & Ahmadi, 2023).

The current study also showed that MBCT improves ambiguity tolerance in mothers of children with autism, consistent with prior studies (Azizi et al., 2024; Griffith et al., 2023). Mindfulness skills help individuals gain insight into their thought patterns, emotions, and impulsive behaviors, enabling them to make skillful and purposeful responses rather than automatically reacting to environmental events. This is particularly important considering that mothers of children with ASD typically exhibit lower tolerance for ambiguity and often rely on habitual, unconscious responses to environmental events. Mindfulness therapy facilitates changes in emotional, affective, and cognitive structures, empowering individuals to generate new responses without being overwhelmed by ambiguity (Azizi et al., 2024).

In conclusion, MBCT effectively increases happiness in mothers by reducing depression, anxiety, and stress and enhancing positive psychological components. Mindfulness practice strengthens awareness of thoughts, emotions, and feelings, helping individuals attain a state of calmness and ease while reducing negative reactions to unpleasant events. These exercises enable individuals to respond consciously and accept challenges in life, leading to improved happiness and mental health.

Furthermore, mindfulness provides mothers with the ability to gain insight into their thought patterns and behaviors, allowing them to choose more effective and purposeful responses. This is especially beneficial for mothers of children with ASD, who often face difficulties in tolerating ambiguity. MBCT helps them increase their tolerance for ambiguity and fosters innovative, adaptive responses to life's challenges. Overall, this study highlights that utilizing psychological methods such as resilience training and mindfulness can significantly improve happiness and the ability to cope with challenges, thereby enhancing the quality of life for mothers of children with ASD.

One limitation of this study was the use of convenience sampling and the exclusive focus on mothers of children with ASD. Future research could benefit from comparing MBCT with other therapeutic approaches, such as metacognitive therapy, schema therapy, dialectical behavior therapy, and behavioral activation. Finally, considering the demonstrated effectiveness of MBCT in improving resilience and happiness among mothers of children with autism, it is recommended that psychological interventions receive increased attention from relevant institutions and organizations.

Authors' Contributions

Authors contributed equally to this article.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

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

References

- Abdollahi Bagherabadi, G., & Karimi, N. (2022). The effectiveness of mindful self-compassion training on rumination and social anxiety in mothers of children with autism. *Rooyesh Psychology Journal*, 11(12), 173-182. <https://frooyesh.ir/article-1-4200-fa.html>
- Asgari Nejad, F., & Habibi Asgarabad, M. (2021). The effectiveness of mindfulness-based cognitive therapy on increasing resilience in mothers of children with autism. *New Ideas Quarterly*, 10(14), 1-10. <https://jnip.ir/article-1-612-fa.html>
- Azizi, M., Imannezhad, S., Moradpoor, M., Alaghbandian, E., Saeidi, P., Sobhani, M., & Mohammadi, Y. (2024). Increasing the tolerance of mothers with children with autism: the effectiveness of cognitive therapy based on mindfulness-experimental research. *Annals of medicine and surgery*, 86(1), 207-211. <https://doi.org/10.1097/MS9.0000000000001525>
- Buchholz, A. A., Czerwińska, K., & Wolan-Nowakowska, M. (2024). Psychological Resilience of Mothers of Children with Autism Spectrum Disorder (ASD) and Perceived Social Support. *Lubelski Rocznik Pedagogiczny*, 43(1), 47-65. <https://doi.org/10.17951/lrp.2024.43.1.47-65>
- Burns, R. A., & Crisp, D. A. (2022). Prioritizing happiness has important implications for mental health, but perhaps only if you already are happy. *Applied Research in Quality of Life*, 17(1), 375-390. <https://doi.org/10.1007/s11482-020-09891-6>
- Chase, B. (2022). The unexpected comfort of feeling it all: A support group for mothers of autistic adolescents using the lens of ambiguous loss. *Clinical Social Work Journal*, 50(4), 436-444. <https://doi.org/10.1007/s10615-022-00834-2>
- Griffith, G. M., Saville, C. W., Halstead, E. J., & Hastings, R. P. (2023). Mindfulness as a Potential Moderator Between Child Behavior Problems and Maternal Well-Being. *American Journal on Intellectual and Developmental Disabilities*, 128(6), 411-424. <https://doi.org/10.1352/1944-7558-128.6.411>
- Havdahl, A., Niarchou, M., Stamawska, A., Uddin, M., van der Merwe, C., & Warrier, V. (2021). Genetic contributions to autism spectrum disorder. *Psychological medicine*, 51(13), 2260-2273. <https://doi.org/10.1017/S0033291721000192>
- Hedayati Dana, S., Saberi, H., & Nasrollahi, B. (2023). Comparison of the effectiveness of mindfulness-based cognitive therapy and spirituality therapy on resilience. *Behavioral Sciences Research Journal*, 21(1), 1-10. <http://rbs.mui.ac.ir/article-1-1431-fa.html>
- Kostiukow, A., Poniewierski, P., Janowska, D., & Samborski, W. (2021). Levels of happiness and depression in parents of children with autism spectrum disorder in Poland. *Acta Neurobiologiae Experimentalis*, 81(3), 279-285. <https://doi.org/10.21307/ane-2021-026>
- Kurt, Ö., Sivrikaya Tokgöz, N., & Fazlioglu, Y. (2023). Examining Perceived Social Support and Levels of Happiness in Mothers of Children with Autism Spectrum Disorder. *International Education Studies*, 16(4), 59-65. <https://doi.org/10.5539/ies.v16n4p59>
- Levterova-Gadjalova, D., & Fyodorova-Radicheva, M. (2024). The specifics of parental stress in parents of children with disabilities enrolled in inclusive education. In *EDULEARN24 Proceedings* (pp. 10682-10688). <https://doi.org/10.21125/edulearn.2024.2658>
- Mealer, M., Boeldt, D., Cochran, K., Hodapp, R., Forster, J., Conrad, D., & Moss, M. (2021). A mindfulness-based cognitive therapy (MBCT) intervention to improve resilience and mitigate symptoms of burnout syndrome in critical care nurses: Results of a randomized trial. *Open Journal of Nursing*, 11(8), 653-667. <https://doi.org/10.4236/ojn.2021.118055>
- Rios, K., Aleman, J., & Burke, M. (2020). Special education experiences and stress among Latina mothers of children with autism spectrum disorder (ASD). *Autism Spectrum Disorders*, 10(15), 1-12. <https://doi.org/10.1016/j.rasd.2020.101534>
- Shams, S., & Kakaberaei, K. (2022). Comparison of perceived stress, mental comfort, and resilience among parents of children with autism, intellectual disability, and hyperactivity. *New Approach in Educational Sciences Quarterly*, 4(2), 135-144. <https://doi.org/10.22034/NAES.2022.327055.1170>
- Spinelli, C., Ibrahim, M., & Khoury, B. (2022). Cultivating ambiguity tolerance through mindfulness: An induction randomized controlled trial. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02597-4>
- Taherabadi, S., Hejri, M., & Keshtekar, M. (2020). The role of psychological capital in predicting tolerance of ambiguity and perceived social stigma in mothers of children with autism spectrum disorder. *Disability Studies Journal*, 11(1), 1-9. https://jdisabilstud.org/browse.php?a_id=1958&slc_lang=en&sid=1&printcase=1&hbnr=1&hmb=1
- Tang, A. C. Y., & Lee, R. L. T. (2021). Effects of a group mindfulness-based cognitive programme on smartphone

addictive symptoms and resilience among adolescents: study protocol of a cluster-randomized controlled trial. *BMC Nursing*, 20(1), 86. <https://doi.org/10.1186/s12912-021-00611-5>

Valizadeh, H., & Ahmadi, V. (2023). The effectiveness of mindfulness-based cognitive therapy on happiness and tolerance of ambiguity in mothers of children with autism spectrum disorder. *Applied Psychology*, 1(65), 193-212. https://apsy.sbu.ac.ir/article_102572.html?lang=en

Valizadeh, H., & Parandin, S. (2022). The effectiveness of mindfulness-based cognitive therapy on irrational beliefs and happiness in the elderly. *Aging Psychology Journal*, 8(1), 11-24.

https://www.researchgate.net/publication/380348006_The_Effectiveness_of_Mindfulness-Based_Cognitive_Therapy_on_Irrational_Beliefs_and_Happiness_of_the_Elderly

Xu, M. X., & Ju, X. D. (2023). Abnormal brain structure is associated with social and communication deficits in children with autism Spectrum disorder: a voxel-based morphometry analysis. *Brain Sciences*, 13(5), 779. <https://doi.org/10.3390/brainsci13050779>