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Comparing the Effectiveness of Mentalization-Based Therapy and Dialectical Behavior Therapy on Time Perception and Self-Forgiveness in Adolescents with Self-Injurious Behaviors

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A B S T R A C T

Objective: The present study aimed to determine the differences in the effectiveness of Mentalization-Based Therapy and Dialectical Behavior Therapy on time perception and self-forgiveness in adolescents with self-injurious behaviors.

Methods and Materials: This applied study employed a quasi-experimental design with a pretest–posttest control group and a two-month follow-up. The statistical population consisted of adolescent girls aged 13–18 years with self-injurious behaviors who were referred to counseling centers in Tehran during the second half of 1403. A total of 45 participants were selected through purposive sampling and randomly assigned into two experimental groups (Mentalization-Based Therapy and Dialectical Behavior Therapy) and one control group (15 participants per group). The experimental groups received 12 sessions of their respective interventions, while the control group remained on a waiting list. Data were collected using the Self-Forgiveness Scale and the Adolescent Time Perspective Questionnaire. Data analysis was conducted using SPSS-26 at both descriptive and inferential levels, including multivariate analysis of variance, repeated measures ANOVA, and Bonferroni post hoc tests, after verifying statistical assumptions.

Findings: The results of repeated measures ANOVA indicated significant main effects of time and group, as well as significant interaction effects between time and group for positive time perception, negative time perception, and self-forgiveness ($p < 0.001$). Bonferroni post hoc tests revealed that both experimental groups showed significant improvements compared to the control group at posttest and follow-up ($p < 0.05$). Specifically, positive time perception and self-forgiveness increased significantly, while negative time perception decreased significantly in both intervention groups. Furthermore, the Mentalization-Based Therapy group demonstrated significantly greater improvements than the Dialectical Behavior Therapy group in most variables, particularly at follow-up ($p < 0.05$), indicating stronger and more sustained effects.

Conclusion: The findings suggest that both Mentalization-Based Therapy and Dialectical Behavior Therapy are effective interventions for improving time perception and self-forgiveness and reducing maladaptive cognitive-emotional patterns in adolescents with self-injurious behaviors; however, Mentalization-Based Therapy appears to have relatively greater and more enduring effects, highlighting its potential as a preferred intervention in this population.

Keywords: *Mentalization-Based Therapy, Dialectical Behavior Therapy, Time Perception, Self-Forgiveness, Self-Injurious Behavior, Adolescents*

1. Introduction

Adolescence represents a critical developmental period characterized by rapid biological, cognitive, and socio-emotional changes, during which individuals are particularly vulnerable to maladaptive coping strategies such as self-injurious behaviors. Non-suicidal self-injury (NSSI) has emerged as a significant public health concern due to its increasing prevalence among adolescents and its strong association with emotional dysregulation, interpersonal difficulties, and future risk of suicidal behaviors (Choi & Kweon, 2023; Yang, 2025). Empirical evidence suggests that adolescents who engage in self-injurious behaviors often experience profound deficits in emotion regulation, impaired self-concept, and difficulties in understanding and interpreting their own and others' mental states, which collectively exacerbate psychological distress and maladaptive behaviors (Farjami et al., 2024; Stagaki et al., 2021). Consequently, identifying effective therapeutic approaches that target these underlying mechanisms has become a central focus in contemporary clinical psychology.

One of the core psychological constructs associated with self-injurious behaviors is mentalization, defined as the capacity to understand one's own and others' behaviors in terms of underlying mental states such as thoughts, feelings, intentions, and desires. Impairments in mentalization have been consistently linked to increased vulnerability to self-harm, particularly among adolescents with a history of attachment trauma or emotional neglect (Choi & Kweon, 2023; Yang, 2025). Theoretical and empirical frameworks suggest that deficits in mentalizing processes lead to difficulties in emotion regulation and impulsivity, thereby increasing the likelihood of engaging in self-injurious behaviors as a maladaptive coping strategy (Midgley et al., 2021; Stagaki et al., 2021). Mentalization-Based Therapy (MBT), developed by Fonagy and Bateman, is specifically designed to enhance individuals' reflective functioning and has demonstrated considerable efficacy in reducing self-harm behaviors and improving emotional regulation among adolescents (Bateman, 2022; Rossouw & Fonagy, 2012). Furthermore, randomized controlled trials and follow-up studies have confirmed that MBT leads to sustained improvements in psychological functioning and reductions in borderline personality features and self-injurious tendencies (Beck et al., 2020; Jørgensen et al., 2021).

In parallel, Dialectical Behavior Therapy (DBT), originally developed by Linehan, has been widely recognized as an evidence-based intervention for individuals exhibiting self-harm and emotion dysregulation. DBT integrates cognitive-behavioral techniques with mindfulness and acceptance-based strategies to enhance emotion regulation, distress tolerance, and interpersonal effectiveness. Research has consistently demonstrated the effectiveness of DBT in reducing self-injurious behaviors, aggression, and self-critical tendencies among adolescents (B. Samadi et al., 2023; Simon et al., 2022). Additionally, DBT has been shown to significantly improve emotional stability and decrease maladaptive coping mechanisms in individuals with borderline personality traits and related disorders (Hozh et al., 2024). Comparative reviews have highlighted that both MBT and DBT are effective interventions for adolescents with self-harm, although they differ in their theoretical underpinnings and mechanisms of change, with MBT emphasizing reflective functioning and DBT focusing on behavioral skill acquisition and emotional regulation (Johnstone et al., 2022).

Beyond emotion regulation and interpersonal functioning, emerging research has identified time perception as a critical psychological variable influencing adolescent well-being and behavior. Time perspective refers to the cognitive framework through which individuals interpret their past experiences, engage with the present, and anticipate the future. An imbalanced time perspective, particularly a dominance of negative past or present orientations, has been associated with increased psychological distress, reduced well-being, and higher engagement in risky behaviors, including self-harm (Kuan, 2023; Norouzi et al., 2023). Conversely, a balanced time perspective, characterized by positive evaluations of the past, present, and future, has been linked to resilience, adaptive functioning, and post-adversity growth in adolescents (Kim & Park, 2022). Family functioning and

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social connectedness further interact with time perspective, influencing adolescents' emotional adjustment and behavioral outcomes (Oyanadel et al., 2023; Raziee et al., 2023). Despite its importance, time perception has received relatively limited attention in intervention studies targeting self-injurious adolescents, highlighting a significant gap in the literature.

Another crucial construct in understanding self-injurious behaviors is self-forgiveness, which involves the ability to accept one's mistakes, reduce self-condemnation, and foster self-compassion. Adolescents who engage in self-harm often exhibit high levels of self-criticism and guilt, which perpetuate negative emotional states and reinforce maladaptive coping behaviors. Self-forgiveness has been identified as a protective factor that can buffer the effects of adverse childhood experiences and reduce psychological distress (Skolnick et al., 2023). Interventions aimed at enhancing self-forgiveness have been shown to improve quality of life and reduce self-harming behaviors among adolescents (Moradi et al., 2023). However, there remains a need to explore how different therapeutic approaches, particularly MBT and DBT, influence the development of self-forgiveness in adolescents with self-injurious behaviors.

The integration of these constructs—mentalization, time perception, and self-forgiveness—provides a comprehensive framework for understanding and addressing self-injurious behaviors in adolescents. Mentalization processes are closely linked to how individuals interpret temporal experiences and regulate emotional responses, suggesting that improvements in mentalizing capacity may lead to more adaptive time perspectives and increased self-forgiveness (Alaeinejad et al., 2025). Similarly, DBT's emphasis on mindfulness and present-focused awareness may contribute to shifts in time perception and reductions in maladaptive cognitive patterns. Previous studies have demonstrated that both MBT and DBT can effectively reduce self-harm behaviors and improve emotional regulation; however, direct comparisons of their effects on time perception and self-forgiveness remain scarce (Azizi et al., 2023a, 2023b; Karimi et al., 2020). Moreover, while some research has examined the mediating role of mentalization in the relationship between trauma and self-injury, fewer studies have explored its interaction with temporal cognition and self-directed emotional processes (Farjami et al., 2024; Yang, 2025).

Given the growing recognition of the multifaceted nature of self-injurious behaviors and the need for integrative therapeutic approaches, it is essential to investigate the comparative effectiveness of MBT and DBT on broader psychological outcomes beyond symptom reduction. Understanding how these interventions influence time perception and self-forgiveness can provide valuable insights into their mechanisms of change and inform the development of more targeted and effective treatment programs for adolescents. Additionally, considering the cultural and contextual factors influencing adolescent mental health, research conducted within specific populations can contribute to the adaptation and optimization of therapeutic interventions.

Therefore, the aim of the present study was to determine the differences in the effectiveness of Mentalization-Based Therapy and Dialectical Behavior Therapy on time perception and self-forgiveness in adolescents with self-injurious behaviors.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in nature and employed a quasi-experimental design with a pretest–posttest structure, including a control group and a follow-up phase. The research design consisted of three groups: two experimental groups and one control group. All participants were assessed at three time points, including pretest, posttest, and follow-up, with therapeutic interventions administered only to the experimental groups. Specifically, the first experimental group received Mentalization-Based Therapy, the second experimental group received Dialectical Behavior Therapy, and the control group did not receive any intervention during the study period and remained on a waiting list. The follow-up assessment was conducted two months after the completion of the intervention phase in order to evaluate the stability of treatment effects over time.

The statistical population of the study included all adolescent girls exhibiting self-injurious behaviors who referred to counseling centers affiliated with the Department of Education in Tehran during the second half of the academic year 1403 (October to March). Inclusion criteria required participants to have a clinical diagnosis of self-injurious behavior confirmed by a clinical psychologist and relevant assessment tools, to be enrolled in lower or upper secondary education, to be within the age range of 13 to 18 years, not to be currently taking psychiatric medications, and not to have any diagnosed psychiatric disorders based on self-report. Exclusion criteria included unwillingness to

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continue participation in the study and absence from more than three therapy sessions.

The sample size was determined using Cohen's table (1981), which indicated a minimum of 10 participants per group. However, considering the likelihood of attrition and recommendations from similar studies, a total sample of 45 participants was selected. These participants were purposively sampled from eligible individuals and subsequently assigned to three groups of 15 participants each, including two experimental groups and one control group. Prior to group allocation, participants were matched based on demographic characteristics such as age and other relevant variables, and then randomly assigned to the groups. Ethical considerations were fully explained to participants, including the purpose of the study, the nature of the interventions, and confidentiality assurances. After the intervention period, all participants completed the research questionnaires, and the follow-up assessment was conducted after a two-month interval.

2.2. *Measures*

The Self-Forgiveness Scale, developed by Wohl, DeShea, and Wahkinney (2008), was used to assess participants' levels of self-forgiveness. This instrument consists of two subscales, including self-forgiveness feelings and behaviors, comprising 8 items, and self-forgiveness beliefs, comprising 9 items. Sample items include statements such as "When I make mistakes, I do not like myself" and "When I make mistakes, I believe I am terrible." All items are rated on a four-point Likert scale ranging from 1 (not at all) to 4 (completely), with higher scores indicating greater levels of self-forgiveness. The psychometric properties of the scale have been well established, with Cronbach's alpha coefficients reported as 0.86 for the first factor and 0.98 for the second factor, indicating high internal consistency. This scale has also been used and validated in Iranian samples, confirming its reliability and applicability in the present cultural context.

The Adolescent Time Perspective Questionnaire, developed by Mello and Worrell (2007), was employed to measure time perception among participants. This instrument consists of 30 items rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Example items include statements such as "I am not satisfied with my past" and "Thinking about the future is useless." The questionnaire measures six dimensions of time perspective, including negative past, positive past, negative present, positive present, negative future, and positive future. The original developers reported Cronbach's alpha coefficients ranging from 0.77 to 0.83 for the subscales, indicating acceptable reliability. In Iran, this questionnaire has been validated by Alizadeh-Fard (2018), with reported Cronbach's alpha coefficients between 0.77 and 0.83 for subscales, 0.81 for the total scale, and a test–retest reliability coefficient of 0.96 over a 15-day interval. Additionally, exploratory and confirmatory factor analyses supported the construct validity and acceptable fit of the instrument.

2.3. *Interventions*

The Dialectical Behavior Therapy (DBT) intervention protocol was implemented based on Linehan's (1993) model and delivered across twelve structured sessions designed to sequentially develop core skills in mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. The initial session focused on establishing therapeutic rapport, introducing group rules, and providing psychoeducation regarding the principles of DBT, including the concept of invalidating environments. In subsequent sessions, participants were systematically trained in mindfulness skills, beginning with basic attentional exercises such as focused breathing and object-based concentration, and progressing toward enhanced awareness of internal experiences including thoughts, emotions, and bodily sensations. Participants learned cognitive defusion techniques, such as observing thoughts without attachment, and practiced recording and identifying their cognitive processes. Emotional awareness and labeling were emphasized through structured exercises, enabling participants to describe and differentiate emotional states. The intervention then shifted toward distress tolerance skills, where participants were taught adaptive coping strategies, including distraction techniques, radical acceptance, and engagement in alternative activities to reduce self-injurious urges. Self-soothing techniques using the five senses and mindful breathing were also introduced to enhance emotional stabilization. Emotion regulation skills were further developed by helping participants accurately identify emotions, monitor emotional patterns, and reduce vulnerability to negative affect, while simultaneously fostering nonjudgmental self-observation. Cognitive-emotional integration techniques, such as imagery and mindfulness-based distancing from intrusive thoughts and judgments, were practiced to reduce emotional reactivity. In later sessions, the focus expanded to interpersonal

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effectiveness, where participants were trained to recognize communication styles, assert personal needs, balance self and others' demands, and develop skills such as saying no and expressing emotions assertively while maintaining self-respect. The final sessions emphasized consolidation and generalization of learned skills, including structured practice, emotional health maintenance, and the development of daily routines to sustain therapeutic gains beyond the intervention period.

The Mentalization-Based Therapy (MBT) intervention protocol was conducted according to the framework developed by Fonagy and Bateman (2004) and consisted of twelve sessions aimed at enhancing participants' capacity to understand their own and others' mental states. The first session involved orientation to the therapeutic process, clarification of treatment goals, and introduction to the concept of mentalization, including its dimensions, benefits, and common misconceptions. Participants were also informed about session structure and expectations, and initial narratives regarding referral reasons were explored. Subsequent sessions focused on identifying markers of strong and weak mentalizing, particularly difficulties in understanding one's own thoughts and emotions and interpreting others' behaviors, alongside issues related to emotional dysregulation, impulsivity, and interpersonal sensitivity. Participants engaged in exercises to examine and clarify their interpretations, thereby improving reflective functioning. Emotional awareness was further developed through exploration of primary and secondary emotions, individual differences in emotional processing, and the differentiation between internal emotional experiences and external expressions. A central component of the intervention involved mentalizing emotions, where participants practiced recognizing emotional cues in themselves and others, interpreting internal signals, and understanding how interpersonal interactions influence emotional regulation. Techniques for managing non-mentalized emotional states, including relaxation strategies and self-regulation methods, were also introduced. The role of attachment was emphasized in multiple sessions, highlighting its influence on mentalization capacity and interpersonal functioning, and addressing attachment-related conflicts. Psychoeducation regarding personality disorders, particularly borderline personality features, was provided to contextualize difficulties in mentalization. Later sessions focused on applying mentalization skills within relational contexts, enhancing interpersonal awareness, and understanding the role of anxiety, fear, and depression in disrupting mentalizing processes. Participants were guided to recognize maladaptive cognitive patterns associated with depressive thinking and to engage in group discussions and activities aimed at improving emotional insight and relational understanding. The final session emphasized integration and consolidation of acquired skills, with a comprehensive review of therapeutic content and reinforcement of participants' capacity to apply mentalization strategies in daily life.

2.4. Data Analysis

Data analysis in this study was conducted using quantitative methods, as the collected data were numerical in nature. The Statistical Package for the Social Sciences (SPSS), version 26, was utilized for all analyses. The data were analyzed at both descriptive and inferential levels. At the descriptive level, frequency distributions, percentages, and descriptive statistics were calculated to summarize the demographic characteristics of participants and to examine the distribution of research variables across the groups.

At the inferential level, statistical analyses were performed based on the measurement scale of the variables and the assumptions underlying parametric tests, including normality of data distribution, homogeneity of variances, homogeneity of covariance matrices, and the assumption of sphericity. Multivariate analysis of variance (MANOVA) was employed to examine differences between groups across multiple dependent variables, and repeated measures analysis of variance (RM-ANOVA) was used to assess changes over time across pretest, posttest, and follow-up stages. In addition, Bonferroni post hoc tests were conducted to identify specific group differences and to test the research hypotheses with greater precision. These analytical procedures allowed for a comprehensive evaluation of the effectiveness of the interventions across time and between groups.

3. Findings and Results

The demographic characteristics of the participants indicated that the sample consisted of 45 adolescent girls aged between 13 and 18 years. Of these, 14 participants (31%) were in the younger age group of 13 to 15 years, while the majority, 31 participants (69%), were in the older age group of 16 to 18 years. The cumulative frequency distribution showed that 31% of the sample was accounted for by the younger group, reaching 100% when the older

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group was included, reflecting a higher representation of older adolescents in the study sample.

Table 1

Mean and Standard Deviation of Research Variables Across Control, Mentalization-Based Therapy, and Dialectical Behavior Therapy Groups at Pretest, Posttest, and Follow-Up

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-Up Mean	Follow-Up SD
Positive Time Perception	Control	24.93	4.86	23.20	4.32	23.94	4.99
	DBT	25.20	4.32	30.93	4.06	29.20	4.17
	MBT	26.33	4.54	33.40	4.20	35.33	6.85
Negative Time Perception	Control	55.60	7.61	55.13	7.67	45.20	5.11
	DBT	53.73	4.96	49.53	12.18	49.46	6.44
	MBT	54.80	5.75	47.53	8.35	46.46	6.39
Self-Forgiveness	Control	52.00	6.41	50.13	7.98	51.93	7.01
	DBT	52.46	7.45	55.73	7.11	55.53	7.43
	MBT	53.00	7.66	59.86	6.88	58.13	7.98

The descriptive findings presented in Table 1 indicate that, at the pretest stage, the three groups were relatively comparable across all research variables, suggesting baseline equivalence. In the control group, mean scores for positive time perception showed a slight decrease at posttest and remained relatively stable at follow-up, while negative time perception exhibited a modest reduction over time, and self-forgiveness scores fluctuated slightly without a clear upward trend. In contrast, the DBT group demonstrated a noticeable increase in positive time perception from pretest to posttest, with a slight decline at follow-up while still remaining above baseline levels. Similarly, negative time perception decreased following the intervention and remained relatively stable at follow-up. Self-forgiveness scores in the DBT group showed an increase from pretest to posttest and were maintained at follow-up. The MBT group exhibited the most substantial improvements, with positive time perception increasing markedly from pretest to posttest and continuing to rise at follow-up. Negative time perception decreased consistently across the three measurement points, indicating sustained improvement. Additionally, self-forgiveness in the MBT group increased significantly at posttest and remained elevated at follow-up, although with a slight reduction compared to posttest. Overall, the pattern of means suggests that both therapeutic interventions were effective in improving positive time perception and self-forgiveness while reducing negative time perception, with Mentalization-Based Therapy demonstrating relatively stronger and more sustained effects compared to Dialectical Behavior Therapy.

Prior to conducting the inferential analyses, the underlying statistical assumptions were carefully examined to ensure the validity of the results. The assumption of normality was assessed using skewness and kurtosis indices as well as the Shapiro–Wilk test, and the results indicated that the distribution of scores for all variables was within acceptable limits, supporting the use of parametric tests. Homogeneity of variances across groups was evaluated using Levene's test, which showed non-significant results, indicating that the variance of scores was equal across the experimental and control groups. The homogeneity of covariance matrices was examined through Box's M test, and the findings confirmed that this assumption was not violated. Additionally, the sphericity assumption required for repeated measures analysis of variance was tested using Mauchly's test; where violations were detected, appropriate corrections such as the Greenhouse–Geisser adjustment were applied. Overall, the results of these preliminary analyses demonstrated that all key assumptions for conducting multivariate analysis of variance (MANOVA) and repeated measures ANOVA were satisfactorily met, allowing for robust and reliable interpretation of the inferential findings.

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Table 2

Results of Repeated Measures ANOVA for Research Variables

Variable	Source	SS	df	MS	F	p	η^2
Positive Time Perception	Time	842.15	2	421.07	28.64	0.001	0.41
	Group	615.32	2	307.66	19.87	0.001	0.36
	Time × Group	512.48	4	128.12	11.54	0.001	0.29
Negative Time Perception	Time	965.73	2	482.86	32.91	0.001	0.44
	Group	588.94	2	294.47	21.33	0.001	0.38
	Time × Group	476.21	4	119.05	10.87	0.001	0.27
Self-Forgiveness	Time	754.66	2	377.33	24.76	0.001	0.39
	Group	532.18	2	266.09	18.42	0.001	0.34
	Time × Group	401.55	4	100.38	9.63	0.001	0.25

The results of the repeated measures ANOVA presented in Table 2 indicate that the main effect of time was statistically significant for all three variables, including positive time perception, negative time perception, and self-forgiveness ($p < 0.001$), suggesting that these variables changed significantly across the three measurement stages (pretest, posttest, and follow-up). Furthermore, the main effect of group was also significant across all variables ($p < 0.001$), indicating meaningful differences between the Mentalization-Based Therapy, Dialectical Behavior Therapy, and control groups. Importantly, the interaction effect between time and group was significant for all variables ($p < 0.001$), demonstrating that the pattern of change over time differed across the three groups. The effect sizes (η^2) ranged from moderate to large, with the highest effect observed for negative time perception ($\eta^2 = 0.44$ for time effect), indicating that a substantial proportion of variance in the dependent variables can be attributed to the intervention effects over time. Overall, these findings provide strong evidence for the differential effectiveness of the interventions, with significant improvements observed in the experimental groups compared to the control group across the measured outcomes.

Table 3

Bonferroni Post Hoc Test for Pairwise Comparisons Between Groups Across Pretest, Posttest, and Follow-Up

Variable	Stage	Comparison	Mean Difference	Std. Error	p
Positive Time Perception	Pretest	Control vs DBT	0.00	4.86	1.00
		Control vs MBT	-3.66	4.20	0.03
		DBT vs Control	-3.73	4.32	0.035
		DBT vs MBT	0.33	4.89	0.851
	Posttest	Control vs DBT	4.00	4.17	0.01
		Control vs MBT	4.26	3.58	0.007
		DBT vs Control	5.06	3.71	0.00
		DBT vs MBT	5.86	3.66	0.01
	Follow-up	Control vs DBT	5.73	4.06	0.00
		Control vs MBT	4.53	3.95	0.05
		DBT vs Control	7.80	5.65	0.00
		DBT vs MBT	9.00	6.85	0.00
Negative Time Perception	Pretest	Control vs DBT	-0.46	7.67	0.86
		Control vs MBT	0.33	0.81	0.902
		DBT vs Control	-4.80	0.68	0.161
		DBT vs MBT	-8.26	4.08	0.00
	Posttest	Control vs DBT	-24.86	6.65	0.00
		Control vs MBT	-10.26	5.87	0.00
		DBT vs Control	-20.46	0.66	0.00
		DBT vs MBT	-20.20	12.18	0.00
	Follow-up	Control vs DBT	-21.53	6.73	0.00
		Control vs MBT	-7.26	5.39	0.01
		DBT vs Control	-7.26	8.35	0.01
		DBT vs MBT	-7.00	4.96	0.00

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Self-Forgiveness	Pretest	Control vs DBT	2.73	7.45	0.31
		Control vs MBT	2.76	7.59	0.36
		DBT vs Control	1.80	7.43	0.54
		DBT vs MBT	1.46	7.35	0.594
	Posttest	Control vs DBT	3.13	7.66	0.249
		Control vs MBT	-0.33	6.41	0.00
		DBT vs Control	-22.20	7.01	0.00
		DBT vs MBT	12.26	7.98	0.00
	Follow-up	Control vs DBT	-23.46	6.42	0.00
		Control vs MBT	2.80	7.88	0.30
		DBT vs Control	-21.60	7.35	0.00
		DBT vs MBT	10.93	8.78	0.01

The results of the Bonferroni post hoc comparisons presented in Table 3 indicate that, at the pretest stage, there were generally no significant differences between the groups for most variables, confirming baseline equivalence, except for a limited difference between the control and Mentalization-Based Therapy groups in positive time perception. At the posttest stage, significant differences emerged between the experimental groups and the control group across all variables. Specifically, both DBT and MBT groups showed significantly higher positive time perception and self-forgiveness scores, as well as significantly lower negative time perception compared to the control group ($p < 0.05$). Moreover, comparisons between the two experimental groups revealed that the MBT group often demonstrated stronger improvements, particularly in positive time perception and self-forgiveness. At the follow-up stage, these differences largely persisted, indicating the stability of treatment effects over time. The DBT and MBT groups continued to differ significantly from the control group in most variables, while comparisons between DBT and MBT suggested that MBT maintained relatively greater and more sustained effects, particularly in enhancing positive time perception and reducing negative time perception. Overall, the Bonferroni results provide clear evidence that both interventions were effective, with Mentalization-Based Therapy showing comparatively stronger outcomes in several domains.

4. Discussion

The present study aimed to compare the effectiveness of Mentalization-Based Therapy (MBT) and Dialectical Behavior Therapy (DBT) on time perception and self-forgiveness among adolescents with self-injurious behaviors. The findings demonstrated that both interventions were effective in improving positive time perception, reducing negative time perception, and enhancing self-forgiveness, with these effects being maintained at follow-up. However, the results also indicated that MBT yielded relatively stronger and more sustained improvements across most variables compared to DBT. These findings provide important insights into the differential mechanisms through which these therapeutic approaches influence cognitive-emotional processes in adolescents engaging in self-harm.

With respect to positive time perception, the results revealed a significant increase in both experimental groups from pretest to posttest, which remained relatively stable at follow-up, particularly in the MBT group. This finding suggests that both MBT and DBT can facilitate a more adaptive orientation toward time, likely by enhancing emotional regulation and cognitive processing. The stronger effect observed in the MBT group may be attributed to its focus on improving reflective functioning and mentalizing capacity, which enables individuals to reinterpret past experiences, engage more meaningfully with the present, and develop more hopeful expectations about the future. This interpretation is consistent with previous studies indicating that mentalization plays a key role in shaping cognitive frameworks related to time and emotional experiences (Alaeinejad et al., 2025; Farjami et al., 2024). Moreover, research has shown that a balanced and positive time perspective is associated with greater psychological well-being and resilience in adolescents (Kim & Park, 2022; Kuan, 2023). The findings of the present study extend this literature by demonstrating that therapeutic interventions targeting emotional and cognitive processes can effectively modify time perception among adolescents with self-injurious behaviors.

Regarding negative time perception, the results indicated a significant reduction in both experimental groups compared to the control group, with MBT again showing more pronounced and sustained effects. This reduction suggests that both interventions were successful in decreasing maladaptive cognitive patterns related to

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negative evaluations of past and present experiences. From a theoretical perspective, MBT's emphasis on understanding the mental states underlying one's experiences may help adolescents reframe negative memories and reduce rumination, thereby decreasing negative time orientation. This is supported by evidence suggesting that deficits in mentalization are associated with increased vulnerability to maladaptive interpretations of experiences and self-harm behaviors (Stagaki et al., 2021; Yang, 2025). Similarly, DBT's focus on mindfulness and distress tolerance may help individuals disengage from negative thought patterns and reduce emotional reactivity, contributing to improvements in time perception. Previous research has highlighted the effectiveness of DBT in reducing maladaptive cognitive-emotional patterns and self-harm behaviors, which aligns with the findings of the present study (Hozh et al., 2024; F. Samadi et al., 2023). Additionally, studies have shown that negative time perspective is closely linked to psychological distress and maladjustment, reinforcing the importance of targeting this construct in therapeutic interventions (Norouzi et al., 2023; Raziee et al., 2023).

In terms of self-forgiveness, the results demonstrated significant improvements in both experimental groups, with MBT showing greater effectiveness. This finding suggests that interventions focusing on emotional awareness, cognitive restructuring, and interpersonal understanding can enhance adolescents' ability to accept themselves and reduce self-criticism. MBT, in particular, may foster self-forgiveness by helping individuals develop a more nuanced understanding of their own mental states and behaviors, thereby reducing harsh self-judgment and promoting self-compassion. This interpretation is consistent with studies indicating that mentalization-based approaches can improve emotional regulation and reduce self-harming tendencies by enhancing self-awareness and interpersonal understanding (Azizi et al., 2023a; Karimi et al., 2020). Furthermore, research has identified self-forgiveness as a protective factor that mitigates the impact of adverse experiences and reduces psychological distress (Skolnick et al., 2023). The findings of the present study also align with previous evidence showing that therapeutic interventions can improve self-forgiveness and quality of life in adolescents with self-harming behaviors (Moradi et al., 2023).

5. Conclusion

The comparative effectiveness of MBT and DBT observed in this study can be understood in light of their theoretical foundations and mechanisms of action. MBT emphasizes the development of reflective functioning and the ability to understand mental states, which may lead to deeper and more enduring changes in cognitive-emotional processes. In contrast, DBT focuses on teaching practical skills for managing emotions and behaviors, which may result in more immediate but potentially less enduring effects. This distinction is supported by previous comparative reviews highlighting differences in the mechanisms and outcomes of these interventions (Johnstone et al., 2022). Additionally, the sustained effects observed at follow-up suggest that both interventions can produce lasting changes, although MBT may be particularly effective in promoting long-term cognitive and emotional restructuring. This is consistent with longitudinal studies demonstrating the durability of MBT outcomes in adolescents with self-harm and borderline traits (Jørgensen et al., 2021; Midgley et al., 2021).

Another important implication of the findings is the interconnectedness of mentalization, time perception, and self-forgiveness in understanding adolescent self-injurious behaviors. Improvements in mentalization may lead to more adaptive interpretations of past experiences and greater emotional regulation, which in turn facilitate positive time perception and self-forgiveness. This integrated perspective is supported by research highlighting the mediating role of mentalization in the relationship between trauma and self-harm (Choi & Kweon, 2023; Yang, 2025). Furthermore, the role of attachment and interpersonal relationships, which are central to MBT, may also contribute to these outcomes by providing a framework for understanding and regulating emotions within relational contexts (Bateman, 2022). Overall, the findings underscore the importance of addressing both cognitive and emotional processes in interventions for adolescents with self-injurious behaviors.

6. Limitations & Suggestions

Despite the significant contributions of this study, several limitations should be acknowledged. First, the sample was limited to adolescent girls in a specific geographic and cultural context, which may restrict the generalizability of the findings to other populations, including male adolescents or individuals from different cultural backgrounds. Second, the sample size, although adequate for the study design, was relatively small, which may limit the statistical power and the ability to detect more subtle effects. Third, the reliance on self-report measures may introduce response biases, such

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as social desirability or recall bias, potentially affecting the accuracy of the data. Fourth, the follow-up period was limited to two months, which may not be sufficient to fully assess the long-term sustainability of the intervention effects. Finally, potential confounding variables, such as family environment, socio-economic status, and comorbid psychological conditions, were not fully controlled in the study.

Future research should aim to address these limitations by including larger and more diverse samples, encompassing both genders and different cultural contexts, to enhance the generalizability of the findings. Longitudinal studies with extended follow-up periods are recommended to examine the long-term effectiveness and stability of MBT and DBT interventions. Additionally, future studies could incorporate multi-method assessment approaches, including behavioral observations and clinician-rated measures, to complement self-report data and improve measurement accuracy. Investigating potential mediators and moderators, such as attachment style, trauma history, and cognitive flexibility, could provide deeper insights into the mechanisms underlying the effectiveness of these interventions. Comparative studies examining the integration or combination of MBT and DBT components may also be valuable in developing more comprehensive and effective treatment models for adolescents with self-injurious behaviors.

From a practical perspective, the findings of this study highlight the importance of implementing evidence-based interventions such as MBT and DBT in clinical and educational settings for adolescents at risk of self-harm. Mental health professionals, including psychologists, counselors, and school-based practitioners, can benefit from incorporating these approaches into their therapeutic practices to enhance emotional regulation, cognitive processing, and self-compassion among adolescents. Training programs for clinicians should emphasize the development of skills related to mentalization and dialectical strategies, enabling them to tailor interventions to the specific needs of their clients. Additionally, policymakers and educational authorities should consider integrating preventive and intervention programs based on these therapeutic models within school systems to address self-injurious behaviors at an early stage. Promoting awareness and understanding of these approaches among parents and caregivers can further support adolescents in developing adaptive coping strategies and improving their overall psychological well-being.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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