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The Effects of Mentalization-Based Therapy and Attachment-Based Therapy on Positive and Negative Affect Regulation in Individuals with Borderline Personality Disorder

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ABSTRACT

This study compared mentalization-based therapy (MBT) and attachment-based therapy (ABT) for positive and negative affect in individuals with borderline personality disorder (BPD). A quasi-experimental pretest-posttest-follow-up design included 45 participants aged 18-35 years with BPD, randomly assigned to MBT (n=15), ABT (n=15), or a control condition (n=15). The interventions comprised 10 weekly two-hour sessions delivered by trained therapists. The Borderline Symptom List and Positive and Negative Affect Schedule assessed outcomes at pre-test, post-test, and 2-month follow-up. Mixed-model analysis of variance revealed significant main effects of time on positive affect ($F=703.44$, $p<0.001$) and negative affect ($F=1422.68$, $p<0.001$). The time × group interactions were significant for both outcomes (positive affect: $\eta^2_p = 0.84$; negative affect: $\eta^2_p = 0.85$), with large effect sizes. Both MBT and ABT significantly improved positive and negative affect relative to the control condition. Importantly, MBT demonstrated superior effectiveness in enhancing positive affect. Treatment gains were maintained during the 2-month follow-up period. Both MBT and ABT effectively improve affect regulation in BPD through distinct mechanistic pathways: MBT via enhanced mentalizing capacity and ABT via improved relational security. MBT's superiority in positive affect suggests a particular clinical benefit for subjective well-being. Despite these promising findings, the modest sample size limits the statistical power and generalizability of the results. Larger multicenter randomized controlled trials are recommended to confirm these findings and establish optimal treatment strategies for individuals with BPD.

Keywords: Borderline Personality Disorder; Psychotherapy; Affect; Emotions; Therapeutic Intervention

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Introduction

Borderline personality disorder (BPD) is a severe and prevalent psychiatric disorder. Most large-scale studies estimate the prevalence of BPD in the general adult population at 0.7% to 2.7%, with some studies reporting up to 5.9%, depending on the diagnostic criteria and methodology. Psychiatric inpatient settings have significantly higher prevalence rates [1]. Approximately 10% of outpatient psychiatric patients meet the BPD criteria, and 30%–75% experience severe stress-related paranoid ideation [2]. Individuals with BPD experience marked emotional dysregulation, often manifesting as impulsivity [3,4].

Affect comprises two independent dimensions: positive affect (energy, engagement, and confidence) and negative affect (distress, anger, and irritability). Positive affect is associated with improved mental health and life satisfaction, whereas elevated negative affect is correlated with poor health outcomes and psychological distress [5,6]. As affect regulation directly influences adaptive functioning, identifying effective interventions for BPD is critical [7,8].

Standard cognitive-behavioral interventions, while evidence-based for symptom reduction, focus on behavioral management without addressing the underlying developmental deficits, particularly impaired mentalizing capacity and relational trauma, which perpetuate affective dysregulation [9]. Additionally, these interventions require lengthy treatment durations and intensive resource demands, limiting accessibility in acute care settings, where patients with BPD frequently present in crisis [10]. Consequently, we selected mentalization-based therapy (MBT) and attachment-based therapy (ABT) because both directly target the core mechanisms underlying BPD: impaired understanding of mental states and insecure attachment patterns [9,11].

Mentalization, defined as the capacity to understand one's own and others' mental states, addresses a fundamental BPD deficit. This cognitive-affective capacity enables emotional regulation and interpretation of adaptive behavior [9,12]. Research demonstrates MBT's effectiveness in improving BPD symptoms and affective functioning [13-16]

Attachment-based therapy addresses insecure attachment patterns and facilitates secure relationship functioning [16,17]. Studies have shown ABT's effectiveness across diverse clinical populations in improving emotion regulation and reducing distress [17-21]. However, no research has compared MBT and ABT on positive and negative affect in BPD populations. This study addresses this gap by examining how these theoretically distinct interventions differentially affect affective outcomes in patients with BPD.

Materials and Methods

This study employed a quasi-experimental pretest-posttest-follow-up design with two experimental and one control group. The statistical population consisted of all individuals with borderline personality disorder (BPD) who were referred to psychological centers in Mashhad in 2024. Participants were included if they: met the BPD diagnostic criteria based on clinical interviews and structured questionnaires, were aged 18–35 years, had completed at least high school education, had no chronic physical illnesses, were committed to regular therapy attendance, and were not currently using psychotropic medications. Participants were excluded if they: missed more than two therapy sessions, withdrew their consent, or participated in concurrent psychological treatment during the previous year.

The sample size was determined based on the conventional guidelines for experimental designs in clinical psychology research, which recommend a minimum of 15 participants per group to achieve adequate statistical power [22,23]. This recommendation is grounded in effect size estimates from prior MBT and ABT studies in BPD populations, which typically show large effects ($d > 0.8$) [10,14]. With 15 participants per group (total= 45), the study was sufficiently powered to detect large effects.

From the target population, 45 individuals who met the inclusion criteria were purposively sampled from three psychological centers in Mashhad. Following identification, participants were randomly assigned to groups using a computer-generated randomization sequence with block randomization (block size = 3) to ensure a balanced allocation across groups. Random assignment was conducted by an independent research coordinator who was masked to the participant characteristics and intervention type. Participants were assigned to the following groups: mentalization-based therapy group ($n = 15$), attachment-based therapy group ($n = 15$), and control group ($n = 15$). This randomization procedure minimized the allocation bias and ensured baseline group equivalence.

Study Settings and Intervention Procedures

Interventions were conducted at three psychiatric centers in Mashhad, where participants were initially referred: Pooya Psychology Clinic (private specialty practice), the Psychology Department Clinic at Mashhad University of Medical Sciences (university-

affiliated academic program), and the Community Mental Health Center (publicly funded facility). Both mentalization-based therapy (MBT) and attachment-based therapy (ABT) comprised 10 weekly individual sessions, each lasting 120 minutes, conducted over approximately 10–12 weeks. All sessions were held in designated private clinical rooms to ensure confidentiality and minimize environmental distraction. Session times were scheduled flexibly to accommodate the participants' availability and maximize treatment attendance. This approach maintained ecological validity by preserving continuity with the participants' existing clinical relationships and treatment settings.

Data collection occurred at three time points: baseline (pretest) prior to intervention initiation, immediately post-intervention (posttest) following the final therapy session using identical questionnaires administered at baseline, and two-month follow-up to assess the persistence and durability of treatment effects. All measurement sessions were conducted in private settings, consistent with the baseline procedures, to ensure standardization.

Data Collection Instruments

Borderline Personality Disorder Scale: This 23-item self-report scale is an abbreviated version of the 90-item Borderline Symptom List developed by Bohus et al. [24]. This scale effectively distinguishes individuals with borderline personality disorder from those with other mental disorders and is sensitive to changes in treatment duration. The abbreviated Borderline Symptom List assesses individuals' feelings and experiences over the past week, with scores ranging from 0 (not at all) to 4 (very strong). On one hand, the questionnaire items cover diagnostic criteria; for example, affective instability (my mood changes rapidly in terms of anxiety, anger, and depression), recurrent suicidal behaviors, gestures or threats, or self-harm behaviors (I have no faith in my right to life, the idea of death has special appeal to me, I think about harming myself, and I want to punish myself), and symptoms of transient dissociation (I feel very distant from myself). However, items based on empirical findings regarding self-criticism, self-esteem problems, emotional vulnerability, and cruelty toward shame, self-disgust, loneliness, and helplessness (such as criticism has a destructive effect on me, I do not trust others, and I feel vulnerable) have been added to this scale [24]. Since this scale is not a diagnostic instrument, it has no cut-off point [25]. The Cronbach's alpha coefficient for the abbreviated version of this questionnaire has been reported to range from 0.94 to 0.97, indicating good reliability [26]. In the present study, questionnaire reliability, as measured by Cronbach's alpha, was 0.76.

Positive and Negative Affect Scale: This questionnaire, developed by Watson et al. [27], assesses positive and negative affect.

The questionnaire contained 20 items measured on a 5-point Likert scale ranging from very slightly to extremely. Each component of negative and positive affect contained ten items, with minimum and maximum scores of 20 and 100, respectively. Higher scores on each component indicate a greater experience of that type of affect. Crawford and Henry [28] reported internal reliability coefficients of 0.89 for positive affect and 0.85 for negative affect.

Therapy Protocols

The intervention program consisted of 10 weekly two-hour sessions for each experimental group. Attachment-based therapy sessions were delivered according to the protocols developed by Brisch [11] and Jahanbakhsh et al. [29]. Mentalization-based therapy sessions were implemented according to the protocol developed by Bateman and Fonagy [30], expanded to 10 sessions. The session summaries for both therapy protocols are presented in Table 1.

Results

The mean and standard deviation for participants' age were 25.666 (5.009). The frequency and percentage distributions for education level were as follows: high school diploma, 7 (15.6%); bachelor's degree, 23 (51.1%); master's degree, 12 (26.7%); and doctorate, 3 (6.7%). The descriptive findings of this study, including statistical indices such as the mean and standard deviation for positive and negative affect variables in the experimental and control groups across the pre-test, post-test, and follow-up phases, are presented in Table2. To examine the comparative effectiveness of mentalization-based therapy and attachment-based therapy on positive and negative affect in individuals with borderline personality disorder, participants' scores on positive and negative affect across pretest, posttest, and follow-up phases were subjected to mixed ANOVA. Table 3 presents the results of the sphericity and within-subject effects tests. The results in Table 3 indicate that Mauchly's test of sphericity was not significant for positive and negative affect variables ($P = 0.070$ and $P = 0.078$, respectively), demonstrating that the sphericity assumption was met. The time effect was significant for both positive and negative affect ($P < 0.001$), indicating that the levels changed over time. The time × group interaction effect was significant ($P < 0.001$) for both variables, indicating that changes over time differed across groups.

Due to mentalization-based therapy and attachment-based therapy, experimental groups experienced

greater positive affect and less negative affect, with this effectiveness maintained over time

The results in Table 4 show that positive affect scores significantly increased from pretest to posttest ($P < 0.001$) but did not differ between posttest and follow-up ($P = 1.000$), demonstrating that the intervention effects remained stable. Positive affect scores differed significantly between experimental groups 1 and 2 ($P < 0.001$), indicating that mentalization-based therapy was more effective than attachment-based therapy in improving positive affect.

Both experimental groups differed significantly from the control group on positive affect ($P < 0.001$), confirming the effectiveness of both interventions. Negative affect scores significantly decreased from pretest to posttest ($P < 0.001$) but showed no significant difference between posttest and follow-up ($P = 1.000$), demonstrating intervention results remained stable. Negative affect scores showed no significant difference between experimental group 1 and experimental group 2 ($P = 1.000$), indicating both interventions were equally effective on negative affect. Both experimental groups differed significantly from the control group on negative affect ($P < 0.01$), confirming the effectiveness of both interventions on reducing negative affect.

Table 1. Summary of Attachment-Based Therapy and Mentalization-Based Therapy Sessions

Session	Attachment-Based Therapy	Mentalization-Based Therapy
1	Explanation of attachment, attachment problems, symptoms of behavioral disorders, and the relationship between mental health and attachment.	Overview of session structure, objectives, and basic rules. Explanation of dimensions and benefits of mentalization, indicators of poor and good mentalization, problems in mentalizing self and others, emotion regulation and impulsivity problems, and interpersonal sensitivity. Clarification of participants' interpretations by the group leader and assignment of homework.
2	Treatment rationale and goal setting, description of psychological and physiological needs and the necessity of responding to them, training in availability and scenario-building techniques, scenario development for responding to individual needs, and practice with a therapist.	Review of previous session and homework. Session objectives include approaches to emotions and feelings, the interpretation of internal emotional signs, the self-regulation of emotions, and the management of disturbing non-mentalizing emotions—presentation of relaxation technique.
3	Techniques for verbal communication, storytelling, scenario development regarding question-and-answer exchanges, and clarifying the individual's position in the family to create feelings of value and self-esteem.	Review of previous session and homework. Characteristics and specific objectives of mentalization-based therapy. Training and practice of mentalization in the group and assignment of homework.
4	Necessity of continuity and stability of positive behavior to repair disrupted trust, training in contact technique (physical, especially eye contact), scenario development regarding expression of genuine affection, and mental imagery.	Review of previous session and homework. Importance of establishing relationships with others and engaging in group activities. Educational presentation regarding the course and treatment of depression and borderline personality disorder.
5	Facilitating friendships with peers and encouraging relationship building; providing opportunities for active participation in group tasks; and developing scenarios for active companionship, playfulness, and cheerfulness.	Homework review. Inquire from group members about problems they wish to address in the group: therapist validation and clarification of issues raised by group members.
6	Active cooperation in activities, scenario development regarding cooperation and interaction between the attachment figure and the individual, to increase positive interaction and avoid coercion.	Exploration of problems and challenging them when necessary. Affective identification and affective focus on topics raised by the group.
7	Examination of unresolved behavioral issues, training in creating a joyful and stimulating living environment to reduce depression levels, training in verbal reinforcement techniques, and avoiding isolation.	Training in mentalization to facilitate epistemic trust. Mentalization of relationships with attention to transference markers.
8	Training in family stress management techniques focused on reducing an individual's anxiety level, providing reassurance regarding parental support, and depicting a bright future; scenario development to increase enjoyable recreational activities.	Integration of mentalization skills into daily life. Practicing mentalizing in interpersonal conflicts and identifying triggers for non-mentalizing responses. Role-playing exercises to strengthen mentalization capacity.
9	Training in spectator parenting techniques for oppositional defiant behaviors; training in the differential reinforcement of positive behaviors technique.	Application of mentalization to emotional regulation and impulse control. Discussion of progress in understanding mental states of self and others and identification of areas requiring continued practice.
10	Discussion of existing barriers to implementing therapeutic techniques, explaining the importance of continuing learned practices to establish trust, security, and repair attachment, discussion regarding achievement of initial treatment goals, and summary and conclusion.	Preparation for treatment termination. Review of mentalization skills acquired—discussion of relapse prevention and maintaining gains. Focus on feelings of loss in the context of treatment ending and treatment termination.

Table 2. Descriptive Indices of Positive and Negative Affect in Experimental and Control Groups

Component	Group	Pretest M (SD)	Posttest M (SD)	Follow-up M (SD)
Positive Affect	Experimental 1	24.33 (0.59)	38.20 (0.45)	37.93 (0.502)
	Experimental 2	25.00 (0.57)	33.13 (0.49)	33.06 (0.52)
	Control	27.46 (0.53)	28.00 (0.64)	27.13 (0.62)
Negative Affect	Experimental 1	33.66 (0.590)	23.86 (0.70)	24.20 (0.71)
	Experimental 2	32.53 (0.68)	24.60 (0.71)	24.60 (0.72)
	Control	31.06 (0.68)	29.86 (0.67)	29.86 (0.67)

Table 3. Mauchly's Test of Sphericity and Within-Subjects Effects Test Results

Component	Test	Mauchly's W	χ^2	df	Sig	Sum of Squares	Mean Square	F	Sig
Positive Affect	Sphericity	0.878	5.329	2	0.070	-	-	-	-
	Time	-	-	-	-	1137.778	1137.778	703.435	0.001
	Time × Group	-	-	-	-	738.289	369.144	228.225	0.001
Negative Affect	Sphericity	0.883	5.110	2	0.078	-	-	-	-
	Time	-	-	-	-	864.900	864.900	1422.681	0.001
	Time × Group	-	-	-	-	290.067	145.033	238.567	0.001

Table 4. Bonferroni Post-Hoc Test Results for Phases and Group Comparisons

Variable	Comparison	Mean Difference	Standard Error	Sig	95% CI
Positive Affect					
	Pretest to Posttest	-2.733	0.211	0.001	-3.22 to -2.24
Phases					
	Pretest to Follow-up	-2.567	0.242	0.001	-3.12 to -2.01
	Posttest to Follow-up	0.167	0.178	1.000	-0.26 to 0.59
Groups	Exp 1 vs. Exp 2	3.089	0.699	0.001	1.35 to 4.83
	Exp 1 vs. Control	5.956	0.699	0.001	4.21 to 7.70
	Exp 2 vs. Control	2.867	0.699	0.001	1.12 to 4.61
Negative Affect					
	Pretest to Posttest	6.244	0.181	0.001	5.82 to 6.67
Phases					
	Pretest to Follow-up	6.200	0.164	0.001	5.82 to 6.58
	Posttest to Follow-up	-0.044	0.133	1.000	-0.38 to 0.29
Groups	Exp 1 vs. Exp 2	0.044	0.958	1.000	-2.35 to 2.43
	Exp 1 vs. Control	-3.000	0.958	0.009	-5.39 to -0.61
	Exp 2 vs. Control	-3.044	0.958	0.008	-5.43 to -0.65

Discussion

This study aimed to compare the effectiveness of mentalization-based therapy and attachment-based therapy on positive and negative affect in individuals with borderline personality disorder (BPD). The results indicated that both mentalization-based therapy and attachment-based therapy were effective on positive and negative affect. Additionally, the results showed that mentalization-based therapy was more effective than attachment-based therapy in improving positive affect in individuals with borderline personality disorder.

Although no research has yet compared the effectiveness of mentalization-based therapy and attachment-based therapy specifically on positive and negative affect, substantial evidence supports the efficacy of both interventions for BPD symptom reduction and emotional functioning. Recent meta-analytic evidence demonstrates that psychological treatments for BPD, including MBT and ABT, produce medium to large effect sizes in reducing overall symptomatology, with particular effectiveness in affective instability ($g = 1.267$) and general BPD severity ($g = 1.317$). MBT has demonstrated superiority over treatment-as-usual and structured clinical management in reducing self-harm behaviors and suicidal crises while simultaneously improving interpersonal functioning and quality of life. These improvements persist for years following treatment termination, with longitudinal studies showing that patients continue to demonstrate functional gains six years post treatment. Regarding attachment-based interventions, evidence indicates their effectiveness in improving emotion regulation, reducing psychological distress, and enhancing emotional adjustment across diverse populations. The collective evidence indicates that both MBT and ABT represent evidence-based approaches targeting core BPD pathology [20,31,32]

Mentalization, the capacity to understand one's own and others' mental states, represents a fundamental BPD deficit that perpetuates affective dysregulation [8,9]. Optimal mentalizing requires the flexible application of cognitive-affective capacities; distortions lead to deficits in perspective-taking, overreliance on external cues, and disconnection from internal experiences [8,9]. MBT directly targets these deficits, improving the complexity of mental representations, understanding of social causality, and capacity for emotional investment. By strengthening mentalizing, individuals enhance their emotional regulation, perspective-taking, and interpersonal functioning [8,9,11]. The structured framework of MBT, which balances emotional exploration with cognitive understanding, develops emotional flexibility and affect management [3,12]. Critically, this enhanced capacity extends beyond crisis reduction to cultivate positive affective experiences, such as increased happiness, satisfaction, and sense of efficacy [8,9]. Attachment-based therapy targets insecure attachment patterns in BPD through a secure therapeutic relationship, providing a stable base for exploring relational difficulties [13,14,15]. ABT modifies internal working models by establishing secure relational patterns, improving the capacity to recognize and respond to others' mental states, and strengthening empathy and reflective capacity [15,16]. These changes accelerate relationship repair and establish safe and supportive environments. By improving attachment security, individuals with BPD reduce affective instability and enhance emotional regulation [5,6,15]. Improved relational security simultaneously generates increased positive affect, including feelings of belonging, security, and worth in relationships [5,6,15]. Thus, MBT and ABT represent complementary evidence-based approaches operating through distinct mechanistic pathways: MBT via enhanced mentalization and ABT via improved relational security. MBT's superior effectiveness for positive affect likely reflects its broader therapeutic scope. While ABT primarily targets unhealthy attachment patterns, MBT emphasizes metacognitive development. This development encompasses the capacity to reflect upon, understand, and appreciate mental states in oneself and others. This broader cognitive focus enhances individuals' capacity to recognize and appreciate positive emotional experiences [30,33].

Sophisticated emotional awareness facilitates engagement with and amplifies positive affective states. Enhanced mentalizing further enables individuals to recognize and reciprocate others' positive emotional responses, amplifying positive affect through improved social connections [30]. Both treatments reduce affective dysregulation through improved emotion regulation; however, MBT's additional emphasis on mental state appreciation confers a particular advantage in cultivating sustained positive affect [30,34]. This differential mechanistic pathway has clinical implications for treatment selection. MBT is preferred by individuals who prioritize positive affect enhancement and subjective well-being. ABT is particularly beneficial for individuals with primary relational dysfunction or attachment trauma, where relational repair is the focus of treatment [30,33].

Recommendations for future research

Future research should address these limitations by conducting larger multicenter randomized controlled trials with adequate sample sizes (n ≥ 30 per group) and blinded diagnostic assessments to enhance statistical power and generalizability. Measurement approaches should incorporate multimodal methods that combine self-report questionnaires with objective measures (ecological momentary assessment, behavioral coding, psychophysiological markers) and extended follow-up assessments (6, 12, and 24 months) to evaluate treatment durability.

Mediation and moderation analyses should investigate the mechanisms underlying treatment effects and identify patient characteristics predicting treatment response, while therapist factors should be examined through multi-level modeling. Comparative effectiveness research positioning MBT and ABT against other evidence-based BPD treatments (dialectical behavior therapy, transference-focused psychotherapy) and cost-effectiveness analyses are needed to inform clinical decision-making and resource allocation in the future. Finally, research examining treatment effectiveness across diverse populations and implementation science investigating the real-world integration of these interventions into acute care and community mental health settings would enhance generalizability and maximize public health impact.

Limitations

Several limitations constrain the interpretation of However; several limitations constrain the interpretation of these findings. The modest sample size (n = 15 per group) limits the statistical power to detect small-to-medium effects and generalizability; future research should employ larger, multicenter designs with n ≥ 30 per group. The geographic restriction to Mashhad limits the applicability to other regions and cultural contexts, as BPD presentations and treatment outcomes vary substantially across locations. Exclusive reliance on self-report instruments introduces response bias, including dichotomous thinking and identity disturbance characteristics of BPD. Future studies should incorporate objective measures (e.g., ecological momentary assessment, behavioral coding, and psychophysiological markers). The 10-week intervention and two-month follow-up period are brief; extended follow-up assessments (6, 12, and 24 months) would clarify the durability of the treatment gains. Finally, the absence of a comparison with other evidence-based BPD treatments (dialectical behavior therapy, transference-focused psychotherapy) limits conclusions regarding relative effectiveness.

Conclusion

Both mentalization-based therapy and attachment-based therapy effectively increased positive affect and decreased negative affect in individuals with borderline personality disorder. Mentalization-based therapy was more effective in increasing positive affect than attachment-based therapy. These findings suggest that both interventions can be valuable for clinicians working with individuals with borderline personality disorder. Future research should investigate these therapies across diverse populations, incorporate multimodal assessment methods (combining interviews with questionnaires), and examine outcomes across different age groups and time periods. Clinicians are encouraged to consider both mentalization-based therapy and attachment-based therapy as evidence-based interventions for emotional regulation in individuals with borderline personality disorder referred to acute care and outpatient settings.

Authorship contribution statement

All authors have reviewed and approved the final version of the manuscript. M ST conceived and designed the study. F SY conducted the study and collected the data; MS and MST performed the data analysis and interpretation.

Ethical Consideration

This study was approved by the Research Ethics Committee at Islamic Azad University - Tehran North Branch (Code: IR.IAU.TNB.REC.1404.407). All procedures were conducted in accordance with the Declaration of Helsinki (2008). Prior to study enrollment, all participants provided written informed consent after receiving detailed explanations of the research objectives, procedures, potential risks, and benefits. Participants were assured of their right to withdraw from the study at any time without penalty. During study implementation, confidentiality was strictly maintained, and all data were stored securely and identified only by participant codes rather than names. Participants were supported through effective communication regarding potential concerns, including anxiety from responding to questionnaires, concerns about reduced self-esteem, and worries about results affecting their futures.

Declaration of Competing Interest

The authors have no conflict of interests related to this article.

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Conflict of interest declaration

We, the undersigned authors, hereby declare our potential conflicts of interest related to the research, authorship, and/or publication of this manuscript submitted to the Interdisciplinary Journal of Acute Care (IJAC).

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Generative AI

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of tables, or their corresponding captions.

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