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Comparing the Effectiveness of Dialectical Behavior Therapy and Metacognitive Therapy on Cognitive Fusion and Self-Criticism in Women with Generalized Anxiety Disorder

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A B S T R A C T

Objective: This study aimed to compare the effectiveness of dialectical behavior therapy (DBT) and metacognitive therapy (MCT) in reducing cognitive fusion and self-criticism among women diagnosed with generalized anxiety disorder (GAD).

Methods and Materials: The study employed a quasi-experimental pretest–posttest control-group design with a two-month follow-up. The statistical population consisted of women diagnosed with GAD who attended Avaye Daroon and Tarannom-e Zendegi clinics in Tehran between March and May 2025. Using purposive sampling based on the study inclusion criteria, 45 eligible women were selected and randomly assigned to three groups: DBT, MCT, and control, with 15 participants in each group. The experimental groups received their respective therapeutic interventions, whereas the control group received no intervention during the study period. Data were collected at pretest, posttest, and follow-up using the Cognitive Fusion Questionnaire developed by Gillanders et al. (2014) and the Levels of Self-Criticism Scale developed by Thompson and Zuroff (2004). Inferential analyses were conducted using repeated-measures analysis of variance followed by the Bonferroni post hoc test.

Findings: Repeated-measures analysis demonstrated significant differences among the groups in changes in cognitive fusion and comparative self-criticism across the assessment phases. Bonferroni comparisons indicated that DBT produced significantly greater reductions in cognitive fusion and comparative self-criticism than MCT ($p < .05$). However, the difference between DBT and MCT in reducing internalized self-criticism was not statistically significant ($p > .05$). The therapeutic advantages observed for DBT in cognitive fusion and comparative self-criticism were maintained at the two-month follow-up assessment.

Conclusion: Both therapeutic approaches can be useful for addressing maladaptive cognitive processes in women with GAD; however, DBT appears to have greater effectiveness than MCT in reducing cognitive fusion and comparative self-criticism. Its multidimensional, skills-based emphasis may therefore provide particular clinical benefits for reducing rigid cognitive involvement and socially comparative forms of self-criticism in this population.

Keywords: *Generalized Anxiety Disorder; Dialectical Behavior Therapy; Metacognitive Therapy; Cognitive Fusion; Self-Criticism*

1. Introduction

Generalized anxiety disorder (GAD) is a persistent and clinically significant anxiety disorder characterized by excessive and difficult-to-control worry concerning multiple areas of everyday life, accompanied by symptoms such as restlessness, fatigue, difficulty concentrating, irritability, muscle tension, and sleep disturbance. According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision*, these symptoms are sufficiently persistent and impairing to interfere with social, occupational, or other important areas of functioning (American Psychiatric, 2022). Contemporary epidemiological evidence continues to demonstrate that GAD represents a substantial mental health burden across different populations and healthcare systems. Recent real-world evidence from the United States has highlighted the considerable prevalence, incidence, and healthcare burden associated with GAD, while systematic reviews have emphasized continuing unmet needs in its identification and treatment (Ferries et al., 2025; Ferries et al., 2026). Population-based research in South China has similarly demonstrated that both full-threshold GAD and subthreshold anxiety symptoms are common and are embedded within complex networks of psychological and contextual correlates (Dong et al., 2025). In populations exposed to severe environmental adversity, such as adolescents affected by armed conflict, substantial levels of GAD have also been documented, emphasizing the sensitivity of generalized anxiety symptoms to prolonged uncertainty, stress, and perceived threat (Awad et al., 2025). Collectively, these findings indicate that GAD is not merely a transient manifestation of worry but a multidimensional disorder with considerable individual, social, and healthcare consequences.

The clinical burden of GAD is particularly important among women. Epidemiological and developmental research has suggested that gender-related biological, psychological, and contextual factors may contribute to differences in vulnerability to anxiety symptoms. In older adults, gender-specific predictors have been identified for generalized anxiety symptoms, indicating that the processes contributing to GAD may differ between women and men (Boehlen et al., 2020). Moreover, emerging evidence concerning ovarian activity, reproductive transitions, and menopause suggests that fluctuations in endocrine and neurobiological processes may influence women's vulnerability to anxiety and other mental health difficulties across the lifespan (Neitzke et al., 2025). Anxiety symptoms can also coexist with physical health problems and contribute to substantial functional impairment. For example, the co-occurrence of anxiety or depressive symptoms with chronic pain has been associated with increased functional burden among adults, underscoring the broader consequences of persistent emotional distress for daily functioning and quality of life (Jennifer et al., 2024). These observations reinforce the importance of examining psychological mechanisms that may sustain anxiety in women and of identifying psychotherapeutic approaches capable of modifying such mechanisms rather than focusing solely on overt symptom reduction.

One cognitive process increasingly recognized as relevant to anxiety and emotional distress is cognitive fusion. Cognitive fusion refers to a psychological state in which individuals become excessively entangled with the content of their thoughts and respond to thoughts as though they were literal truths or direct representations of reality. In such a state, internal verbal events may exert disproportionate control over attention, emotion, and behavior, limiting an individual's ability to respond flexibly to situational demands. Gillanders et al. developed the Cognitive Fusion Questionnaire to operationalize this construct and demonstrated that cognitive fusion was meaningfully associated with psychological distress and related indicators of maladaptive functioning (Gillanders et al., 2014). The Persian version of this instrument has also demonstrated acceptable psychometric properties, supporting its use in assessing cognitive fusion within Persian-speaking populations (Soltani et al., 2016). From a functional perspective, cognitive fusion may be particularly relevant to GAD because persistent worry is often maintained when threat-related predictions, self-evaluations, and catastrophic possibilities are experienced as credible and compelling rather than as temporary mental events.

Recent research has strengthened the theoretical association between cognitive fusion and anxiety. Longitudinal findings among family caregivers of people with dementia have shown that cognitive fusion can contribute to the development or persistence of anxious and depressive symptoms over time, suggesting that this process may operate as more than a simple correlate of distress (Barrera-Caballero et al., 2024). Related evidence indicates that cognitive fusion and experiential avoidance are important psychological processes involved in anxiety

PWJ
Psychology of Woman Journal
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symptoms among family caregivers exposed to sustained stress (Van Hout et al., 2024). More specifically, recent research examining worry-related metacognitive beliefs has found meaningful associations among metabeliefs about worry, cognitive fusion, and acceptance, highlighting the possibility that the tendency to become fused with internal experiences interacts with beliefs about thinking itself (Sanchez-Escamilla et al., 2025). This conceptual overlap is particularly relevant to GAD, in which repetitive worry, attentional inflexibility, attempts to control thoughts, and beliefs about the uncontrollability or usefulness of worry frequently reinforce one another. Sleep disturbance may further intensify these processes, as recent research has identified insomnia as a central component of sleep-related disturbance in individuals with GAD (Xue et al., 2025). Thus, interventions that weaken rigid identification with anxious thoughts and alter the individual's relationship to worry may be particularly useful.

Another important psychological construct associated with anxiety is self-criticism. Self-criticism involves persistent negative evaluation of the self, often characterized by feelings of inadequacy, failure, inferiority, or inability to meet personal or interpersonal standards. Contemporary conceptualizations distinguish between different forms of self-criticism, particularly internalized self-criticism and comparative self-criticism. Internalized self-criticism reflects dissatisfaction with oneself in relation to personally held standards and ideals, whereas comparative self-criticism emerges from unfavorable comparison of oneself with others. Recent theoretical and clinical work has emphasized that self-criticism is a multidimensional construct with significant implications for psychopathology and therapeutic intervention (Pekin & Güme, 2025). Evidence from the general population further indicates that self-criticism is meaningfully associated with anxiety, supporting its relevance beyond depressive conditions alone (Simpson et al., 2025). Self-critical processes may contribute to persistent anxiety by increasing self-monitoring, perceived inadequacy, sensitivity to mistakes, and fear of negative outcomes.

The social and interpersonal dimensions of self-criticism are particularly relevant to comparative self-evaluation. Experimental evidence indicates that social comparison and the type of feedback individuals receive can influence self-critical responses, particularly among psychologically vulnerable individuals (Amănălăchioaie & Diaconu-Gherasim, 2021). Research on social anxiety has likewise demonstrated associations among shame, self-criticism, and day-to-day fluctuations in anxious experiences, suggesting that harsh self-evaluation may amplify emotional reactivity in socially threatening situations (Lazarus & Shahar, 2018). Individuals with social anxiety have also been found to demonstrate difficulties involving self-esteem, dependency, self-efficacy, and self-criticism, further supporting the relationship between negative self-referential processing and anxiety-related psychopathology (Iancu et al., 2015). Although these studies were conducted in contexts beyond GAD, their findings are theoretically relevant because generalized anxiety often involves repetitive negative evaluations concerning one's competence, future performance, relationships, decision-making, and ability to cope with uncertain circumstances.

Importantly, cognitive fusion and self-criticism may not operate independently. When individuals are highly fused with self-critical cognitions, evaluative thoughts such as “I am inadequate,” “I should have done better,” or “others are more capable than I am” may be experienced as objective truths rather than as subjective cognitive events. This may intensify emotional distress and promote repetitive worry, avoidance, and maladaptive coping. Research among married women has demonstrated that cognitive fusion and experiential avoidance can play a mediating role in the relationship between external shame and self-criticism, providing empirical support for the interconnected nature of these processes (Farshad & Samavi, 2022). From this perspective, therapeutic approaches capable of simultaneously improving emotional regulation, reducing rigid cognitive engagement, and modifying maladaptive beliefs about thoughts may have particular value for women with GAD.

Dialectical behavior therapy (DBT) is one intervention that may influence these mechanisms. DBT integrates behavioral and cognitive principles with acceptance-oriented strategies and emphasizes the dialectical balance between accepting present experiences and actively changing maladaptive patterns. Its major skills domains include mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness (Linehan, 2021). These components may be particularly relevant to individuals with GAD because persistent worry is often associated with difficulty tolerating emotional arousal, heightened reactivity to uncertainty, attempts to avoid distressing internal experiences, and ineffective strategies for managing negative affect. Through mindfulness, individuals learn to observe thoughts and emotions without automatically reacting to them; through distress-tolerance skills, they learn

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

to remain engaged with difficult experiences without resorting to maladaptive avoidance; and through emotion-regulation skills, they develop more adaptive responses to intense or persistent affective states. The interpersonal effectiveness component may additionally reduce self-critical and comparison-based responses that emerge in relational contexts.

Although DBT was initially developed for severe emotion dysregulation, its skills have increasingly been examined across a wider range of psychological problems. Wilks and Ward-Ciesielski specifically discussed the application and potential adaptation of DBT skills training for GAD, emphasizing the relevance of established DBT mechanisms to generalized anxiety processes (Wilks & Ward-Ciesielski, 2020). Empirical findings have also demonstrated the potential effectiveness of DBT in reducing cognitive and emotional vulnerabilities in other populations. DBT has been associated with improvements in rumination, emotion regulation, impulsivity, and self-criticism among individuals with trichotillomania (Karimi et al., 2024), and studies involving adolescents with bipolar disorder have reported reductions in self-criticism and other maladaptive behavioral outcomes following DBT-based intervention (Samadi et al., 2023). Research among women with type 2 diabetes has further demonstrated that DBT may improve cognitive components such as cognitive fusion, cognitive avoidance, and cognitive flexibility (Khakshoorshandiz et al., 2020). Likewise, DBT-based intervention has previously been implemented among female university students experiencing problematic smartphone use and loneliness, supporting the broader applicability of DBT skills across different forms of psychosocial distress (Najarpour Ostadi et al., 2018). More recent work using abbreviated virtual DBT skills groups has also reported promising service-user and clinical outcomes, suggesting that DBT skills can remain useful even when adapted to populations and formats beyond the therapy's original context (Hare et al., 2024). Contextual therapeutic approaches more broadly have also shown relevance for difficulties involving emotional dysregulation and experiential avoidance, reinforcing the clinical significance of acceptance- and skills-based methods for changing maladaptive responses to internal experiences (Sequeda et al., 2026).

Metacognitive therapy (MCT) provides a distinct but theoretically relevant approach to GAD. Rather than focusing primarily on the content of individual thoughts, MCT targets the processes that regulate thinking and the beliefs individuals hold about their own cognitive activity. The metacognitive model proposes that psychological disorders are maintained by a cognitive-attentional syndrome characterized by persistent worry or rumination, threat monitoring, self-focused attention, and maladaptive coping strategies. Positive metacognitive beliefs may encourage individuals to engage in worry because they view it as useful for preparation, problem solving, or preventing danger, whereas negative metacognitive beliefs may increase distress by generating the perception that worry is uncontrollable or harmful. MCT therefore seeks to modify these beliefs, reduce prolonged engagement with repetitive thinking, develop detached mindfulness, and increase flexible attentional control (Fisher & Wells, 2021). These mechanisms are directly relevant to GAD, in which worry frequently becomes both the perceived solution to threat and the source of further anxiety.

Evidence supporting MCT has accumulated across anxiety and mood-related difficulties. A randomized controlled trial of home-based metacognitive therapy self-help for patients with cardiovascular disease demonstrated beneficial effects on anxiety and depression, indicating that metacognitive principles can be effectively applied even in populations experiencing significant physical health burdens (Wells et al., 2023). Earlier intervention research has also examined metacognitive therapy in relation to depressive symptoms, rumination, experiential avoidance, and dysfunctional metacognitive beliefs, supporting its potential for modifying repetitive negative thinking processes (Larijani, 2013). The relevance of MCT to cognitive fusion is particularly noteworthy because both constructs concern the individual's relationship with thoughts rather than merely the specific semantic content of those thoughts. By teaching detached mindfulness and challenging beliefs concerning the necessity, usefulness, danger, or uncontrollability of worry, MCT may reduce the tendency to become absorbed in anxious cognition. Recent findings demonstrating associations among metabeliefs about worry, cognitive fusion, and acceptance further reinforce this theoretical connection (Sanchez-Escamilla et al., 2025).

At the same time, DBT and MCT may influence cognitive fusion and self-criticism through partially different therapeutic pathways. DBT provides a broad skills-based intervention addressing emotional vulnerability, distress tolerance, mindfulness, behavioral responses, and interpersonal functioning, whereas MCT more specifically targets metacognitive beliefs, attentional control, and repetitive patterns of worry and rumination. Evidence from contextual and acceptance-oriented treatments indicates that

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

changing the way individuals relate to internal experiences can reduce anxiety-related symptoms. For example, acceptance and commitment therapy has demonstrated beneficial symptomatic and behavioral outcomes in anxiety treatment, illustrating the therapeutic relevance of acceptance, cognitive distancing, and behavioral flexibility (Herbert et al., 2018). Such findings support the wider proposition that reducing rigid attachment to distressing thoughts may represent an important mechanism of psychological change, although different treatment models may achieve this through distinct techniques.

Despite growing interest in these approaches, direct comparisons of DBT and MCT in women with GAD, particularly with cognitive fusion and different forms of self-criticism as outcome variables, remain limited. This gap is clinically important because the continuing burden and unmet treatment needs associated with GAD suggest that symptom reduction alone may not adequately address the psychological processes that contribute to its persistence (Ferries et al., 2025). Cognitive fusion may maintain rigid engagement with worry, whereas internalized and comparative self-criticism may intensify negative self-evaluation and vulnerability to anxiety. At the same time, women may encounter specific biological and psychosocial influences that make understanding these processes particularly relevant (Boehlen et al., 2020; Neitzke et al., 2025). Comparing two theoretically distinct interventions may therefore clarify whether a broad emotion-regulation and skills-based approach or a more focused metacognitive approach produces greater changes in these cognitive and self-evaluative mechanisms.

Accordingly, the present study aimed to compare the effectiveness of dialectical behavior therapy and metacognitive therapy in reducing cognitive fusion, internalized self-criticism, and comparative self-criticism among women with generalized anxiety disorder.

2. Methods and Materials

2.1. Study design and Participant

The present study employed a quasi-experimental design with pretest, posttest, and two-month follow-up assessments and included two experimental groups and one control group. The statistical population consisted of women diagnosed with generalized anxiety disorder (GAD) who attended the Avaye Daroon and Taranom-e Zendegi psychological clinics in Tehran. Participants were recruited through purposive sampling from women who met the eligibility criteria and expressed willingness to participate in the study. A total of 45 eligible women were selected and subsequently randomly assigned to three groups of equal size, including a dialectical behavior therapy (DBT) group, a metacognitive therapy (MCT) group, and a control group, with 15 participants in each group. The first experimental group received eight weekly sessions of DBT, and the second experimental group received eight weekly sessions of MCT, whereas the control group did not receive either of the study interventions during the research period. Assessments of cognitive fusion and self-criticism were conducted for all three groups at pretest, immediately following completion of the interventions, and again two months after the posttest to determine the maintenance of therapeutic effects. Eligibility criteria included obtaining a score of at least 10 on the Generalized Anxiety Disorder-7 Questionnaire as the screening cutoff for clinically relevant anxiety symptoms; confirmation of a diagnosis of generalized anxiety disorder by an experienced psychiatrist working at the participating clinics through a diagnostic interview conducted in accordance with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision criteria (American Psychiatric Association, 2022); provision of informed consent to participate; completion of at least lower-secondary education to ensure sufficient comprehension of the questionnaires and therapeutic materials; absence of narcotic substance use based on participant self-report; no psychological intervention during the preceding year; and no current use of psychiatric medications based on self-report and information available in participants' clinical records. Exclusion and withdrawal criteria included absence from more than two intervention sessions, unwillingness to continue participation at any stage of the study, incomplete completion of the research questionnaires, and unwillingness to perform the therapeutic assignments and exercises incorporated into the DBT or MCT programs. Ethical principles were observed throughout the study, including voluntary participation, provision of adequate information regarding the purpose and procedures of the research, acquisition of written informed consent, confidentiality of participants' personal and clinical information, protection of privacy, the right to withdraw without adverse consequences, and efforts to prevent psychological or other harm associated with participation.

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

2.2. *Measures*

The Generalized Anxiety Disorder-7 Questionnaire (GAD-7), developed by Spitzer et al. (2006), was used as a screening instrument to identify participants with clinically meaningful symptoms of generalized anxiety disorder and to support participant eligibility in conjunction with the psychiatric diagnostic interview. The instrument contains seven primary items assessing the frequency of core anxiety symptoms during the preceding two weeks, together with an additional item evaluating the extent to which these symptoms interfere with occupational, domestic, or interpersonal functioning. Each of the seven symptom items is rated on a four-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), yielding a total score ranging from 0 to 21, with higher scores indicating greater severity of generalized anxiety symptoms. A score of 10 or higher was used as the cutoff criterion for inclusion in the present study. Spitzer et al. (2006) reported strong psychometric properties for the instrument, including a Cronbach's alpha coefficient of .92. Evidence of convergent validity was demonstrated through significant correlations between the GAD-7 and the Beck Anxiety Inventory (r = .72) and between the GAD-7 and the anxiety subscale of the Symptom Checklist-90 (r = .74). In an examination of the Persian version, Naeinian et al. (2011) reported a Cronbach's alpha coefficient of .85 and provided evidence for convergent validity through correlations with Spielberger state anxiety (r = .71) and trait anxiety (r = .52). In the present study, the internal consistency of the GAD-7 was satisfactory, with a Cronbach's alpha coefficient of .80.

The Cognitive Fusion Questionnaire (CFQ), developed by Gillanders et al. (2014), was employed to assess cognitive fusion as one of the primary dependent variables. Cognitive fusion refers to a tendency to become excessively entangled with the literal content of thoughts such that thoughts exert rigid control over behavior and are experienced as direct representations of reality rather than as transient mental events. The CFQ comprises seven items rated on a seven-point Likert scale ranging from 1 (never true) to 7 (always true). Item scores are summed to generate a total score, with higher scores reflecting greater cognitive fusion and stronger behavioral dominance of internal verbal and cognitive experiences. Gillanders et al. (2014) reported excellent internal consistency for the original instrument, with a Cronbach's alpha coefficient of .90. Evidence for concurrent validity was also reported, with cognitive fusion demonstrating a particularly strong association with depressed mood among individuals experiencing depression (r = .85), while correlations were more moderate among individuals who had recovered from depression (r = .58) and lower in a normative sample (r = .23), providing evidence of the measure's sensitivity to psychological distress. The Persian version of the CFQ was evaluated by Soltani et al. (2016), who reported Cronbach's alpha and test-retest reliability coefficients of .86. Evidence supporting its convergent and divergent validity was obtained through correlations with the Believability of Anxious Feelings and Thoughts Questionnaire (r = .47), Social Interaction Anxiety Scale (r = .48), and quality of life (r = −.40). In the present study, the Cognitive Fusion Questionnaire demonstrated acceptable internal consistency, with a Cronbach's alpha coefficient of .79.

The Levels of Self-Criticism Scale (LOSC), developed by Thompson and Zuroff (2004), was used to assess self-criticism and its two theoretically distinct dimensions, namely Internalized Self-Criticism (ISC) and Comparative Self-Criticism (CSC). The instrument consists of 22 items designed to capture different ways in which individuals evaluate themselves negatively. Internalized self-criticism reflects negative self-evaluation resulting from a perceived discrepancy between the actual self and internally established personal standards, ideals, or expectations, whereas comparative self-criticism concerns negative self-evaluation arising from unfavorable comparisons between oneself and other people. Each item is rated on a seven-point Likert scale ranging from 0 (does not describe me at all) to 6 (describes me very well), with higher scores indicating greater levels of the corresponding form of self-criticism. Thompson and Zuroff (2004) reported satisfactory internal consistency, with Cronbach's alpha coefficients of .81 for comparative self-criticism, .87 for internalized self-criticism, and .81 for the overall scale. The moderate correlation between the two subscales (r = .44) supported their conceptual relatedness while indicating that they represented distinguishable dimensions of self-critical cognition. For the Persian version of the instrument, Mousavi and Ghorbani (2007) reported Cronbach's alpha coefficients of .87 for internalized self-criticism, .55 for comparative self-criticism, and .83 for the overall scale. Evidence of concurrent validity was demonstrated through correlations between the self-criticism dimensions and the Inventory of Interpersonal Problems ranging from .20 to .52 and correlations with the Hopkins Symptom Checklist ranging from .17 to .48. In the present study, Cronbach's alpha coefficients were .78 for the Internalized Self-

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

Criticism subscale and .80 for the Comparative Self-Criticism subscale, indicating acceptable internal consistency for both outcome dimensions.

2.3. Interventions

The dialectical behavior therapy intervention was developed based on the theoretical principles, therapeutic techniques, skills-training procedures, and assignments described in the Dialectical Behavior Therapy: Skills Training Manual by Linehan (2021) and was adapted in accordance with the protocol employed by Najarpour Ostadi (2018). The program was delivered by the researcher in eight 90-minute group sessions held once weekly on Mondays at Taranom-e Zendegi Psychology Clinic. Before implementation, the content and face validity of the intervention protocol were assessed by experts, and the resulting Cohen's kappa coefficient of .82 indicated a high level of agreement regarding the appropriateness of the program. The first session focused on introducing the therapeutic program, establishing group rules and goals, familiarizing participants with the principal assumptions of DBT, explaining the dialectical perspective, and distinguishing emotional, rational, and wise states of mind. Participants were introduced to comprehensive awareness and were assigned to prepare a personal commitment to treatment and identify examples of different states of mind in daily situations. The second session focused on basic distress-tolerance skills and included reviewing the previous homework, learning strategies for temporary distraction from harmful or maladaptive behavior, increasing engagement in pleasurable activities, and constructing an individualized distress-tolerance plan. During the third session, advanced distress-tolerance strategies were introduced, including safe-place imagery, clarification of personal values, radical acceptance, and the development of adaptive coping responses to situations that could not be immediately changed. The fourth session introduced core mindfulness skills, including intentional attention, disengagement from automatic cognitive reactions, present-moment awareness, and nonjudgmental observation of internal and external experiences; participants practiced guided meditation and sensory awareness exercises and were asked to complete daily mindfulness exercises. The fifth session expanded mindfulness training by emphasizing radical acceptance, beginner's mind, reduction of judgmental processing, and mindful interpersonal communication, with role-playing and written exercises used to help participants recognize and modify judgmental thoughts. The sixth session addressed emotion-regulation skills and involved identifying and labeling emotions, recognizing emotional vulnerability, reducing factors that intensify negative emotions, increasing positive emotional experiences, and applying systematic problem-solving strategies to emotionally challenging situations. Participants monitored emotional situations throughout the week and practiced at least one adaptive emotion-regulation behavior. The seventh session concentrated on interpersonal effectiveness and effective communication, including recognition of maladaptive interpersonal patterns, assessment of the appropriateness of requests, assertiveness, active listening, boundary setting, and the ability to refuse unreasonable requests while preserving relationships and self-respect. Participants practiced these skills through group exercises and role-playing and subsequently applied assertiveness skills in real-life interactions. The eighth and final session consolidated all previously taught skills, reviewed interpersonal effectiveness and negotiation strategies, analyzed recurrent interpersonal problems, addressed difficulties encountered when applying the skills outside therapy, and encouraged participants to develop a plan for continued independent use of DBT strategies. The posttest assessment was administered following completion of the final session, and participants were informed about the two-month follow-up assessment.

The metacognitive therapy intervention was designed according to the theoretical framework, techniques, and therapeutic assignments presented by Fisher and Wells (2021) and was adapted from the protocol used by Larijani (2013). The intervention was administered by the researcher in eight 90-minute group sessions held once weekly on Wednesdays at Taranom-e Zendegi Psychology Clinic. The intervention protocol underwent expert review for content and face validity before implementation, and a Cohen's kappa coefficient of .80 demonstrated substantial agreement regarding the suitability of its therapeutic content. During the first session, participants were introduced to the general framework, rules, and objectives of metacognitive therapy, and the metacognitive model of emotional disorders was explained. Particular attention was given to identifying episodes of repetitive negative thinking, including worry and rumination, increasing meta-awareness, and beginning mindfulness-based observation of cognitive events. Participants were asked to monitor situations in which repetitive thinking occurred and to practice awareness exercises between sessions. The second session focused on

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

detached mindfulness and postponement of repetitive negative thinking as strategies for weakening beliefs concerning the uncontrollability of worry and rumination. Participants learned to notice thoughts without attempting to suppress, evaluate, engage with, or respond to them and practiced postponing sustained cognitive processing to a predetermined period. The third session involved identifying internal and external triggers of repetitive thinking, strengthening detached mindfulness, challenging negative metacognitive beliefs regarding the uncontrollability of thoughts, and examining behavioral avoidance and reductions in adaptive activity. Participants recorded triggers, practiced detached mindfulness, and monitored their daily activity levels. The fourth session concentrated on challenging positive metacognitive beliefs about the usefulness or necessity of worry and rumination, reviewing participants' ability to postpone repetitive thinking, and introducing attentional control techniques intended to reduce rigid self-focused attention. Participants were encouraged to apply postponement to most triggering situations and critically examine beliefs suggesting that persistent thinking was helpful, protective, or necessary. The fifth session consolidated these techniques by assessing participants' ability to maintain detached mindfulness, continuing to challenge positive metacognitive beliefs, evaluating patterns of daily activity, and increasing involvement in adaptive and positively reinforcing experiences. The sixth session focused more specifically on negative metacognitive beliefs, particularly beliefs that distressing thoughts were dangerous, uncontrollable, or indicative of psychological dysfunction. Cognitive dialogue, restructuring of metacognitive beliefs, and attention-training exercises were used, and participants were instructed to apply detached mindfulness when self-critical or anxiety-related thoughts emerged. The seventh session addressed reassurance-related processes and maladaptive attempts to regulate uncertainty, including excessive reassurance seeking and fear associated with withholding reassurance. Attention training, role-play, and graded behavioral practice were employed to reduce dependence on these strategies and strengthen nonjudgmental observation of thoughts. The eighth and final session reviewed and integrated all therapeutic components, addressed residual positive and negative metacognitive beliefs, anticipated situations that might reactivate worry or rumination, and assisted participants in developing alternative processing plans for responding to future cognitive triggers. Participants prepared an individualized plan for managing repetitive negative thinking and maintaining the skills acquired during treatment. The posttest measures were administered at the conclusion of the intervention, and participants were scheduled for reassessment two months later to evaluate the maintenance of treatment effects.

2.4. Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. The principal inferential analysis consisted of repeated-measures analysis of variance to examine changes in cognitive fusion, internalized self-criticism, and comparative self-criticism across the three measurement occasions of pretest, posttest, and two-month follow-up and to determine whether patterns of change differed among the dialectical behavior therapy, metacognitive therapy, and control groups. Before conducting the main analysis, the relevant statistical assumptions underlying repeated-measures analysis were evaluated, including the distribution of the dependent variables, homogeneity of variances across groups, and the sphericity assumption for within-subject measurements. Where the sphericity assumption was not satisfied, an appropriate corrected estimate was considered for interpretation of within-subject effects. The analysis examined the main effect of time, the between-group effect, and particularly the group-by-time interaction, which indicated whether changes in the outcome variables over the assessment periods differed according to treatment condition. When statistically significant omnibus effects were identified, Bonferroni-adjusted post hoc comparisons were performed to determine the specific differences between DBT, MCT, and the control condition and to compare changes across assessment occasions while controlling for inflation of Type I error resulting from multiple comparisons. Treatment maintenance was evaluated by examining whether improvements observed at posttest remained evident at the two-month follow-up assessment. All statistical tests were conducted using a two-tailed significance criterion, and the level of statistical significance was set at $p < .05$.

3. Findings and Results

The participants in the present study were 45 women with generalized anxiety disorder. The mean age and standard deviation were 32.60 ± 6.62 years in the dialectical behavior therapy group, 33.53 ± 5.33 years in the metacognitive therapy group, and 32.93 ± 6.25 years in the control group. The results of analysis of variance indicated that the groups

PWJ
Psychology of Woman Journal
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were homogeneous in terms of age, with no statistically significant difference among them (F = .090, p = .941). Most participants reported having an associate degree (8 participants, 17.8%, in the dialectical behavior therapy group; 6 participants, 13.3%, in the metacognitive therapy group; and 7 participants, 15.6%, in the control group). The results of analysis of variance indicated that the groups were also homogeneous in terms of educational level, with no statistically significant difference among them (F = .096, p = .908).

Table 1 presents the descriptive statistics for the experimental and control groups across the three stages of the study. As shown in Table 1, the mean scores of the experimental and control groups for cognitive fusion and self-criticism were approximately similar at pretest. However, following the implementation of dialectical behavior therapy and metacognitive therapy, the mean scores of the experimental groups changed at posttest and follow-up. The statistical significance of these changes was examined using repeated-measures analysis of variance.

Table 1

Descriptive Statistics of the Study Variables by Group at Pretest, Posttest, and Follow-Up

Variable	Dimension	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-Up Mean	Follow-Up SD
Cognitive Fusion	—	Dialectical Behavior Therapy	40.87	6.67	28.73	6.75	31.53	5.78
		Metacognitive Therapy	40.07	6.80	33.40	6.78	34.60	7.04
		Control	40.33	6.72	40.13	5.95	41.80	4.38
Self-Criticism	Internalized Self-Criticism	Dialectical Behavior Therapy	32.67	4.84	24.40	6.49	26.40	6.46
		Metacognitive Therapy	31.67	6.83	28.60	6.06	29.53	6.06
		Control	32.33	5.70	34.20	6.01	35.20	6.32
	Comparative Self-Criticism	Dialectical Behavior Therapy	46.20	6.33	33.47	5.96	36.67	8.33
		Metacognitive Therapy	45.50	7.93	38.60	7.29	40.33	5.91
		Control	45.93	6.27	46.04	6.61	47.27	6.33

Before conducting the repeated-measures analysis of variance, its assumptions, including homogeneity of variances, homogeneity of the variance–covariance matrix, and normality of data distribution, were examined. Assessment of normality using the Shapiro–Wilk test at the pretest, posttest, and follow-up stages showed that the distributions of the variables were normal in both the experimental and control groups (p > .05). Homogeneity of variances was examined using Levene's test. The results indicated that this assumption was satisfied at posttest for cognitive fusion (F = .023, p = .977), internalized self-criticism (F = .035, p = .966), and comparative self-criticism (F = .362, p = .699), as all significance levels were greater than .05. Examination of the homogeneity of the variance–covariance matrix using Box's M test also indicated that the F statistic was not significant (F = .409, p = .902). The assumption of sphericity was not violated for cognitive fusion (χ^2 = .74, p = .14), internalized self-criticism (χ^2 = .99, p = .096), or comparative self-criticism (χ^2 = .87, p = .41). Therefore, repeated-measures analysis of variance could be used to examine the stability of the intervention effects. The results are presented in Table 2.

Table 2

Results of Repeated-Measures Analysis of Variance

Variable	Source	df	Mean Square	*F*	*p*	Effect Size
Cognitive Fusion	Group	2	580.27	12.23	.01	.37
	Time	2	475.74	12.83	.01	.23
	Group × Time	4	165.76	4.47	.01	.18
Internalized Self-Criticism	Group	2	430.16	10.20	.01	.33
	Time	2	113.09	3.24	.04	.07
	Group × Time	4	117.38	3.37	.01	.14
Comparative Self-Criticism	Group	2	679.83	1.79	.01	.40
	Time	2	480.83	10.65	.01	.20
	Group × Time	4	180.52	4.00	.01	.16

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

As shown in Table 2, the effect of time on cognitive fusion, internalized self-criticism, and comparative self-criticism across the pretest, posttest, and follow-up stages was statistically significant ($p < .05$). The group effect also indicated that the differences between the treatment groups and the control group in mean scores across the study stages were statistically significant ($p < .05$). Furthermore, the interaction effect of time and group was statistically significant for cognitive fusion, internalized self-criticism, and comparative self-criticism ($p < .05$). These findings indicate that dialectical behavior therapy and metacognitive therapy were effective in improving the study variables among women with generalized anxiety disorder at posttest and follow-up compared with the control group. Bonferroni post hoc tests were subsequently conducted for pairwise comparisons across time and between groups. The results are presented in Table 3.

Table 3

Bonferroni Post Hoc Test for Pairwise Time and Between-Group Comparisons

Variable	Reference Group/Stage	Comparison Group/Stage	Mean Difference	Standard Error	*p*
Cognitive Fusion	Pretest	Posttest	6.333	1.543	.001
	Pretest	Follow-up	4.444	.980	< .001
	Posttest	Follow-up	−1.889	1.266	.430
	Dialectical Behavior Therapy	Metacognitive Therapy	−5.13	1.74	.020
	Dialectical Behavior Therapy	Control	−7.044	1.452	< .001
	Metacognitive Therapy	Control	−4.733	1.452	.007
Internalized Self-Criticism	Pretest	Posttest	3.156	1.260	.049
	Pretest	Follow-up	1.844	1.177	.374
	Posttest	Follow-up	−1.311	1.295	.951
	Dialectical Behavior Therapy	Metacognitive Therapy	−2.111	1.369	.392
	Dialectical Behavior Therapy	Control	−6.089	.369	< .001
	Metacognitive Therapy	Control	−3.978	1.369	.018
Comparative Self-Criticism	Pretest	Posttest	6.400	1.391	< .001
	Pretest	Follow-up	4.356	1.200	.002
	Posttest	Follow-up	−2.044	1.625	.646
	Dialectical Behavior Therapy	Metacognitive Therapy	−4.99	1.88	.030
	Dialectical Behavior Therapy	Control	−7.644	1.480	< .001
	Metacognitive Therapy	Control	−5.044	1.480	.004

As shown in Table 3, the Bonferroni pairwise comparisons across time revealed statistically significant differences in cognitive fusion and comparative self-criticism between pretest and posttest and between pretest and follow-up. Accordingly, reductions in cognitive fusion and comparative self-criticism were observed relative to pretest ($p < .05$). No statistically significant differences were found between posttest and follow-up, indicating that the treatment effects on these variables remained stable over time ($p > .05$). For internalized self-criticism, pairwise comparisons across time showed a statistically significant difference only between pretest and posttest ($p = .049$). No statistically significant differences were observed between pretest and follow-up or between posttest and follow-up ($p > .05$), indicating that the treatment effect on internalized self-criticism was not maintained over time.

The between-group pairwise comparisons indicated that both dialectical behavior therapy and metacognitive therapy were significantly more effective than the control condition in reducing cognitive fusion, internalized self-criticism, and comparative self-criticism ($p < .05$). Furthermore, the mean scores for cognitive fusion and comparative self-criticism were significantly lower in the dialectical behavior therapy group than in the metacognitive therapy group ($p < .05$), indicating greater effectiveness of dialectical behavior therapy on these variables. However, no statistically significant difference was found between dialectical behavior therapy and metacognitive therapy in internalized self-criticism ($p > .05$), indicating that the two therapeutic approaches were similarly effective in reducing internalized self-criticism among women with generalized anxiety disorder.

4. Discussion

The present study aimed to compare the effectiveness of dialectical behavior therapy (DBT) and metacognitive

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

therapy (MCT) in reducing cognitive fusion, internalized self-criticism, and comparative self-criticism among women with generalized anxiety disorder (GAD). The findings demonstrated that the therapeutic interventions produced meaningful changes in the cognitive and self-evaluative outcomes across the assessment periods. More specifically, DBT was significantly more effective than MCT in reducing cognitive fusion and comparative self-criticism, whereas the difference between the two interventions in reducing internalized self-criticism was not statistically significant. Furthermore, the improvements observed in cognitive fusion and comparative self-criticism, particularly among participants who received DBT, were maintained during the two-month follow-up period. Taken together, these findings indicate that although both therapeutic approaches target processes relevant to persistent anxiety, DBT may exert a stronger influence on certain maladaptive cognitive and self-evaluative mechanisms among women with GAD.

The finding that DBT produced a greater reduction in cognitive fusion than MCT is consistent with previous evidence emphasizing the capacity of mindfulness-, acceptance-, and emotion-regulation-based interventions to modify individuals' relationships with distressing thoughts. Cognitive fusion refers to becoming excessively entangled with one's thoughts and treating cognitive events as literal truths rather than transient psychological experiences (Gillanders et al., 2014). Such fusion can restrict psychological flexibility and make anxious individuals more likely to react behaviorally and emotionally to threat-related thoughts. Longitudinal research has demonstrated that cognitive fusion is associated with the development and maintenance of anxious and depressive symptoms, particularly under conditions of sustained stress (Barrera-Caballero et al., 2024). Similarly, cognitive fusion and experiential avoidance have been identified as important psychological processes underlying anxiety symptoms among individuals exposed to chronic caregiving stress (Van Hout et al., 2024). The present findings therefore support the view that reducing fusion with anxious thoughts may represent an important therapeutic mechanism in GAD.

The superiority of DBT for cognitive fusion may be explained by the central role of mindfulness and distress-tolerance skills within this treatment. DBT systematically teaches participants to observe thoughts, emotions, and bodily sensations without immediately evaluating, suppressing, or acting on them (Linehan, 2021). This process can weaken the literal and controlling function of anxious thoughts. In women with GAD, who frequently experience repetitive worry and difficulty disengaging from threat-related cognitions, mindfulness may facilitate recognition that thoughts about possible future dangers are mental events rather than inevitable realities. Distress-tolerance exercises may additionally increase participants' ability to remain in contact with anxiety-provoking internal experiences without attempting to escape or neutralize them. As individuals repeatedly practice observing rather than automatically responding to anxious cognition, cognitive fusion is likely to decrease.

This interpretation is supported by findings reported by Khakshoorshandiz et al., who demonstrated that DBT was effective in modifying cognitive components including cognitive fusion, cognitive avoidance, and cognitive flexibility among women with type 2 diabetes (Khakshoorshandiz et al., 2020). Although their clinical population differed from the present sample, the convergence of findings suggests that DBT skills may influence transdiagnostic cognitive processes rather than disorder-specific symptoms alone. Research on contextual treatments has likewise emphasized the importance of altering rigid relationships with internal experiences and reducing experiential avoidance in individuals with emotional dysregulation (Sequeda et al., 2026). Furthermore, acceptance-oriented therapies have demonstrated that helping individuals distance themselves from the literal content of anxiety-related thoughts can improve psychological and behavioral outcomes (Herbert et al., 2018). These findings provide a theoretical and empirical basis for understanding why DBT may be especially effective in reducing cognitive fusion.

The stronger effect of DBT compared with MCT does not imply that metacognitive therapy is unrelated to cognitive fusion. MCT is specifically designed to modify dysfunctional beliefs about thinking and to reduce repetitive cognitive processes such as worry and rumination through detached mindfulness, attentional control, and modification of positive and negative metacognitive beliefs (Fisher & Wells, 2021). Recent evidence has demonstrated meaningful relationships among metabeliefs about worry, cognitive fusion, and acceptance, suggesting considerable conceptual overlap between metacognitive processes and cognitive fusion (Sanchez-Escamilla et al., 2025). Accordingly, MCT can be expected to reduce excessive engagement with thoughts by teaching clients to discontinue extended processing of worry and to adopt a detached relationship with cognition. Evidence from clinical intervention research also indicates that MCT can reduce anxiety and depression

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

and alter maladaptive repetitive thinking (Larijani, 2013; Wells et al., 2023). Nevertheless, DBT may have produced greater changes in the present study because it approached cognitive fusion through several mutually reinforcing pathways, including mindfulness, radical acceptance, distress tolerance, emotion regulation, and behavioral practice, whereas MCT focused more specifically on beliefs and attentional processes involved in worry.

Another principal finding was that DBT was more effective than MCT in reducing comparative self-criticism. Comparative self-criticism involves evaluating oneself negatively in relation to other people and perceiving oneself as inferior, deficient, or less successful. This form of self-evaluation is closely linked to interpersonal comparison and sensitivity to perceived social standards. Previous research has demonstrated that social comparison processes and evaluative feedback can significantly affect self-critical responding, particularly among psychologically vulnerable individuals (Amănălăchioaie & Diaconu-Gherasim, 2021). Research has also demonstrated meaningful associations between self-criticism and anxiety in the general population (Simpson et al., 2025), while studies involving anxiety-related conditions have indicated that self-criticism is closely connected with shame, low self-esteem, reduced self-efficacy, and interpersonal vulnerability (Iancu et al., 2015; Lazarus & Shahar, 2018). The reduction in comparative self-criticism observed in the present study therefore represents an important therapeutic change rather than merely an ancillary improvement.

The particular effectiveness of DBT in reducing comparative self-criticism may be attributable to the combination of mindfulness, emotion-regulation, and interpersonal-effectiveness skills incorporated into the treatment. Comparative self-criticism is often activated in interpersonal contexts in which individuals evaluate themselves in relation to the achievements, acceptance, appearance, competence, or approval received by others. Through mindfulness, participants may become more capable of identifying these evaluative thoughts without automatically endorsing them. Emotion-regulation training can help individuals manage feelings of inadequacy, shame, envy, embarrassment, or anxiety that may follow unfavorable comparison. At the same time, interpersonal-effectiveness training may strengthen assertiveness, boundary setting, communication, and self-respect, thereby decreasing reliance on external comparison as a basis for evaluating personal worth. The dialectical emphasis on simultaneously accepting oneself and working toward behavioral change may also counteract the rigid, punitive quality characteristic of self-critical thinking.

The present result is consistent with previous evidence demonstrating beneficial effects of DBT on self-criticism. Karimi et al. reported that DBT improved self-criticism alongside rumination and emotion-regulation difficulties among individuals with trichotillomania (Karimi et al., 2024). Samadi et al. similarly demonstrated that DBT reduced self-criticism in adolescents with bipolar disorder while also improving maladaptive behavioral outcomes (Samadi et al., 2023). Although these studies involved different clinical populations, they support the proposition that self-criticism represents a transdiagnostic process responsive to DBT. The present findings extend this evidence to women with GAD and suggest that the effects may be particularly pronounced for the comparative dimension of self-criticism. This result is also theoretically compatible with evidence indicating that external shame and self-criticism are related through mechanisms such as cognitive fusion and experiential avoidance in women (Farshad & Samavi, 2022). By simultaneously reducing cognitive fusion and strengthening adaptive emotional and interpersonal responding, DBT may disrupt the processes that maintain comparison-based negative self-evaluation.

In contrast, no statistically significant difference was observed between DBT and MCT in their effects on internalized self-criticism. Internalized self-criticism differs from comparative self-criticism because it is primarily based on discrepancies between the actual self and personally internalized standards, goals, ideals, or expectations rather than comparison with other people. Contemporary conceptualizations emphasize that self-criticism is multidimensional and may arise from different cognitive, developmental, emotional, and interpersonal processes (Pekin & Güme, 2025). Internalized self-criticism may therefore be more deeply embedded in enduring self-schemas and personal standards than comparative self-criticism, making it less likely that one relatively brief intervention will demonstrate clear superiority over another. The absence of a between-treatment difference may indicate that both DBT and MCT possess mechanisms capable of addressing internal self-evaluative processes, albeit through different therapeutic routes.

DBT may reduce internalized self-criticism by promoting nonjudgmental awareness, emotional acceptance, and a more balanced response to perceived personal shortcomings. Mindfulness skills encourage individuals to notice harsh internal judgments without automatically accepting them as

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

valid descriptions of the self, while emotion-regulation strategies may reduce the intensity of shame and anxiety associated with perceived failure. In comparison, MCT may influence internalized self-criticism by altering the manner in which individuals respond to repetitive negative self-focused thinking. Detached mindfulness teaches clients to observe self-critical thoughts without engaging in prolonged analysis, while modification of metacognitive beliefs may weaken assumptions that repeatedly reviewing one's deficiencies is useful or necessary (Fisher & Wells, 2021). Consequently, although DBT and MCT differ theoretically, both may reduce the persistence and impact of internal self-critical cognition sufficiently to produce comparable therapeutic effects.

The lack of significant superiority for DBT in internalized self-criticism may also reflect the relatively stable and deeply rooted nature of this construct. Compared with situational social comparisons, internally imposed standards may have developed over long periods through repeated experiences, perfectionistic expectations, conditional self-worth, and habitual self-evaluation. Research has demonstrated that self-criticism is associated with enduring psychological vulnerabilities and a range of anxiety-related difficulties (Iancu et al., 2015; Simpson et al., 2025). Therefore, eight sessions may be adequate to reduce engagement with self-critical thoughts but insufficient to produce large differential changes in the underlying self-standards that generate internalized criticism. It is also possible that longer interventions or treatment components more directly focused on self-compassion, core beliefs, and perfectionistic standards would produce clearer differences between approaches.

The maintenance of therapeutic improvements during the two-month follow-up period represents another important finding. The persistence of changes suggests that participants were able to retain and apply at least some of the psychological skills acquired during treatment after the formal intervention ended. DBT places substantial emphasis on repeated skills practice, homework, application to everyday situations, and generalization of therapeutic learning outside sessions (Linehan, 2021). Such practice may contribute to durability because participants acquire specific behavioral repertoires that can be independently implemented when anxiety, cognitive fusion, or self-critical reactions arise. Previous applications of DBT skills across different clinical contexts have similarly supported the adaptability and practical utility of its skills-based structure (Hare et al., 2024; Najarpour Ostadi et al., 2018). The continued effects observed at follow-up are therefore consistent with the expectation that repeated mindfulness, distress-tolerance, and emotion-regulation practice may gradually become incorporated into everyday coping.

The clinical relevance of these findings is heightened by the substantial burden associated with GAD. Recent studies have shown that GAD is prevalent across diverse populations and associated with extensive psychosocial and healthcare consequences (Dong et al., 2025; Ferries et al., 2026). Individuals with GAD may also experience sleep disturbance, with insomnia emerging as a particularly central problem in the disorder (Xue et al., 2025), as well as broader functional impairment when anxiety co-occurs with physical health difficulties (Jennifer et al., 2024). The disorder is therefore unlikely to be adequately conceptualized solely in terms of symptom frequency. Psychological processes such as rigid engagement with thoughts, repetitive worry, self-directed criticism, and emotion-regulation difficulty may contribute substantially to its persistence and functional impact. The present findings suggest that therapeutic approaches targeting these mechanisms can contribute to meaningful cognitive and self-evaluative change.

The focus on women is also noteworthy because vulnerability to anxiety may be shaped by an interaction of psychological, biological, and contextual processes. Research has identified gender-specific predictors of generalized anxiety symptoms (Boehlen et al., 2020), while emerging evidence has emphasized the possible contribution of ovarian activity and menopausal transitions to women's mental health across the lifespan (Neitzke et al., 2025). Although these factors were not directly assessed in the present study, they emphasize the heterogeneity of anxiety experiences among women and the need for interventions that can accommodate multiple pathways to emotional distress. The broad skills orientation of DBT may be advantageous in this respect because it addresses cognitive, emotional, behavioral, and interpersonal functioning concurrently.

5. Conclusion

Overall, the present findings support a process-oriented understanding of psychotherapy for GAD. DBT appeared particularly advantageous for cognitive fusion and comparative self-criticism, potentially because its mindfulness, acceptance, emotion-regulation, distress-tolerance, and interpersonal components target several interacting mechanisms simultaneously. MCT also remains

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

theoretically appropriate for GAD because it directly addresses the beliefs and attentional processes that maintain worry, and previous evidence supports its effectiveness for anxiety-related symptoms and repetitive thinking (Wells et al., 2023). However, the results suggest that when therapeutic goals extend beyond worry reduction to include rigid identification with thoughts and socially mediated self-criticism, the broader skills framework of DBT may offer additional benefits. These findings add to growing evidence that transdiagnostic processes such as cognitive fusion and self-criticism should be considered meaningful targets in the psychological treatment of generalized anxiety.

6. Limitations and Suggestions

The findings of the present study should be interpreted in light of several limitations. First, the relatively small sample of 45 participants may limit statistical power and the generalizability of the findings to the broader population of women with generalized anxiety disorder. Second, participants were recruited through purposive sampling from only two psychological clinics in Tehran, and therefore the sample may not adequately represent women with GAD from other geographical, cultural, socioeconomic, or clinical backgrounds. Third, the outcomes were assessed primarily through self-report questionnaires, which may be influenced by response tendencies, social desirability, participants' momentary emotional states, and subjective interpretations of questionnaire items. Fourth, the follow-up period was limited to two months, preventing conclusions regarding the long-term durability of treatment effects. Fifth, the study did not systematically assess potentially influential variables such as severity and chronicity of GAD, comorbid psychological disorders, stressful life events, personality characteristics, hormonal or reproductive status, socioeconomic conditions, or participants' previous treatment experiences. Finally, because both interventions were administered by the researcher, therapist-related effects and expectancy effects cannot be fully excluded.

Future studies should replicate these findings using larger samples recruited from multiple clinical centers and different regions to improve statistical precision and external validity. Longer follow-up periods, such as six months or one year, would help determine whether reductions in cognitive fusion and self-criticism remain stable over time. Future investigations could also incorporate clinician-rated measures, behavioral assessments, ecological momentary assessment, or qualitative interviews alongside self-report instruments to obtain a more comprehensive understanding of psychological change. Examining potential mediators and moderators would be particularly valuable; for example, researchers could investigate whether changes in mindfulness, emotion regulation, distress tolerance, metacognitive beliefs, rumination, experiential avoidance, or psychological flexibility explain treatment effects. Future studies could also examine whether baseline symptom severity, age, perfectionism, interpersonal sensitivity, reproductive stage, or comorbid depression influences differential response to DBT and MCT. Dismantling studies comparing individual treatment components may further clarify which therapeutic elements are most directly responsible for reducing cognitive fusion and different dimensions of self-criticism.

Mental health professionals working with women with generalized anxiety disorder may consider assessing cognitive fusion and self-criticism alongside conventional anxiety symptoms when developing individualized treatment plans. When patients exhibit pronounced entanglement with worry-related thoughts, harsh social comparison, difficulty tolerating emotional distress, or deficits in emotion regulation, DBT skills training may be particularly appropriate. Clinicians may emphasize mindfulness, nonjudgmental observation, distress tolerance, emotion regulation, and interpersonal effectiveness while encouraging repeated practice between sessions to strengthen skill generalization. Metacognitive therapy may be especially useful when persistent worry is strongly maintained by beliefs about the usefulness, danger, or uncontrollability of thinking. In clinical settings where internalized self-criticism remains pronounced despite improvement in anxiety, treatment may need to be extended or supplemented with interventions more directly addressing rigid personal standards and self-evaluative patterns. Integrating routine follow-up sessions and structured home practice may also help maintain therapeutic gains after completion of formal treatment.

Authors' Contributions

Authors equally contributed 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

PWJ
Psychology of Woman Journal
E-ISSN: 3041-8615

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

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Declaration of Interest

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. The study protocol was reviewed and approved by the Ethics Committee of Islamic Azad University, Arak Branch, under the ethical approval code IR.IAU.ARAK.REC.1403.320.

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