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Comparing the Effectiveness of Cognitive Behavioral Therapy, Dialectical Behavior Therapy, and Paradoxical Exposure Therapy on Distress Tolerance and Relational Distress in Dental Students with Histrionic Personality Traits

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A B S T R A C T

Purpose: This study aimed to compare the effectiveness of cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy in improving distress tolerance and reducing relational distress among dental students with histrionic personality traits.

Methods and Materials: This quasi-experimental study employed a four-group pretest–posttest design with a follow-up assessment. The statistical population consisted of dental students with histrionic personality traits attending hospital-based centers in Isfahan, Iran, during autumn 2024. Through convenience sampling and screening using the Millon Clinical Multiaxial Inventory–IV, 60 eligible students were selected and randomly assigned to cognitive behavioral therapy, dialectical behavior therapy, paradoxical exposure therapy, or a control group, with 15 participants in each group. Data were collected using the Distress Tolerance Scale developed by Simons and Gaher (2005) and the Inventory of Interpersonal Problems developed by Barkham et al. (1996). The data were analyzed using repeated-measures statistical procedures and post hoc comparisons in SPSS version 27.

Findings: The effects of time, group, and the time-by-group interaction were statistically significant for both distress tolerance and relational distress ($p < .01$). Post hoc comparisons demonstrated significant differences between the control group and each of the three intervention groups in both outcome variables ($p < .01$). All three treatments significantly increased distress tolerance and reduced relational distress from pretest to posttest and follow-up. Dialectical behavior therapy produced the greatest improvement in distress tolerance and the largest reduction in relational distress compared with the other interventions. Cognitive behavioral therapy yielded the smallest change in distress tolerance, whereas paradoxical exposure therapy produced the smallest change in relational distress.

Conclusion: Cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy are effective interventions for improving distress tolerance and reducing relational distress in dental students with histrionic personality traits; however, dialectical behavior therapy appears to have comparatively greater therapeutic effectiveness.

Keywords: *Cognitive behavioral therapy; dialectical behavior therapy; paradoxical exposure therapy; distress tolerance; relational distress; histrionic personality traits.*

1. Introduction

Personality traits influence how individuals perceive themselves, regulate emotions, interpret interpersonal events, and respond to the demands of academic, occupational, and social environments. When these traits become inflexible, pervasive, and maladaptive, they can impair psychological adjustment and interpersonal functioning. Histrionic personality traits are particularly relevant in this regard because they are commonly associated with excessive emotionality, a strong need for attention and approval, impressionistic thinking, rapidly shifting affect, suggestibility, and a tendency to perceive relationships as more intimate than they actually are. Although the presence of some expressive or socially engaging characteristics does not necessarily indicate psychopathology, pronounced histrionic features may interfere with stable identity formation, realistic appraisal of relationships, and effective management of negative emotions. Individuals with these traits may become highly sensitive to rejection, criticism, perceived neglect, or the withdrawal of attention, which can intensify emotional reactions and destabilize interpersonal relationships. Research on the developmental dynamics of histrionic traits has emphasized the possible role of family interactions, parental relational patterns, and early experiences of attention and emotional responsiveness in shaping these characteristics (Sima-Comaniciu et al., 2023). Other work has suggested that insight into one's motives, emotional exaggeration, and interpersonal patterns may be limited or inconsistent in individuals with histrionic personality disorder, thereby complicating self-correction and treatment engagement (Starzomska-Romanowska, 2023). Accordingly, histrionic traits should be understood not merely as attention-seeking behaviors but as part of a broader pattern involving emotion regulation, self-worth, interpersonal dependency, and vulnerability to psychological distress.

University students with histrionic personality traits may face particular difficulties because the transition into higher education requires increasing autonomy, sustained academic concentration, emotional self-management, and mature interpersonal functioning. Dental education is especially demanding because students must simultaneously meet intensive theoretical requirements, develop precise clinical skills, communicate effectively with patients and supervisors, and tolerate frequent evaluation. Dental students are exposed to performance pressure, fear of mistakes, competitive academic climates, time constraints, clinical uncertainty, and emotionally charged interactions with patients. For students who depend heavily on external validation or experience criticism as a threat to self-worth, these demands may evoke strong emotional responses and maladaptive relational behaviors. Difficulties may emerge in peer collaboration, communication with faculty members, acceptance of corrective feedback, and management of situations in which attention or approval is not immediately available. Histrionic characteristics may therefore become clinically important in dental settings when they contribute to emotional dysregulation, unstable relationships, or reduced capacity to remain engaged in demanding tasks during periods of distress. Evidence among female students has indicated that symptoms of histrionic personality disorder may be associated with maladaptive personality dimensions, dissatisfaction with body image, insecure attachment patterns, and less adaptive romantic orientations, demonstrating that histrionic traits are embedded in a wider network of self-evaluative and interpersonal vulnerabilities (Borji et al., 2023). Studies have also shown that temperamental characteristics and adverse interpersonal experiences can contribute to cognitive features associated with histrionic personality disorder, suggesting that these patterns arise from interactions among personality disposition, learning history, and relational experiences (Yalch et al., 2023).

One construct that may be particularly important in explaining the psychological functioning of students with histrionic traits is distress tolerance. Distress tolerance refers to the perceived or actual capacity to experience and withstand aversive emotional, cognitive, or physiological states without immediately attempting to escape, suppress, or neutralize them. It is not equivalent to the absence of distress; rather, it reflects the ability to remain engaged in goal-directed behavior while experiencing discomfort. Contemporary conceptualizations consider distress tolerance to be context dependent and shaped by the meaning of a situation, the person's expectations regarding distress, available coping resources, and the anticipated consequences of remaining in or escaping from the distressing experience (Veilleux, 2023). Low distress tolerance may manifest as the belief that negative emotions are unbearable, the tendency to become completely absorbed by distress, negative appraisal of one's emotional reactions, and urgent efforts to regulate or avoid discomfort. In individuals with histrionic traits, low distress tolerance may increase the likelihood of dramatic emotional displays, impulsive communication, reassurance seeking,

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interpersonal escalation, or efforts to restore attention and validation. Such responses may provide temporary emotional relief but can reinforce dependence on external regulation and prevent the development of more adaptive coping strategies.

Distress tolerance has been linked to a wide range of psychological problems. A meta-analysis examining substance-use disorders, eating disorders, and borderline personality disorder found that lower distress tolerance was consistently associated with more severe psychopathology and maladaptive behavioral responses (Mattingley et al., 2022). Although histrionic and borderline personality patterns are diagnostically distinct, both may involve affective instability, sensitivity to rejection, impulsive responding, and interpersonal dysregulation, making distress tolerance clinically relevant to both. Low distress tolerance has also been identified as an important mechanism in the relationship between negative affect and nonsuicidal self-injury, indicating that individuals who perceive emotional pain as intolerable may be more likely to engage in immediate but harmful attempts to regulate it (Slabbert et al., 2022). Conversely, mindful awareness and the capacity to tolerate distress have been associated with better mental-health outcomes among individuals exposed to highly stressful occupational conditions (McDonald et al., 2022). These findings suggest that distress tolerance functions as a transdiagnostic protective factor that enables individuals to remain psychologically engaged when emotions are intense. It may therefore be a suitable treatment target among dental students with histrionic traits who experience academic stress, perceived interpersonal rejection, or corrective feedback as overwhelming.

Distress tolerance is also related to interpersonal functioning because difficulties in enduring negative emotions can shape how individuals communicate, seek reassurance, handle conflict, and respond to relational uncertainty. Relational distress refers to recurring emotional strain, dissatisfaction, conflict, and maladaptive patterns within interpersonal interactions. It may involve poor assertiveness, excessive dependency, hostility, limited openness, difficulty setting boundaries, inadequate supportiveness, or problems considering the perspectives and needs of others. For individuals with histrionic traits, relationships may become an important source of emotional regulation and self-validation. Consequently, interpersonal events such as delayed responses, perceived indifference, criticism, exclusion, or disagreement may trigger disproportionate emotional reactions. These reactions can generate cycles in which attention-seeking behavior, emotional exaggeration, or unstable communication produces conflict, which then increases feelings of rejection and further intensifies the original behavior. Research on pathological personality functioning has demonstrated that maladaptive narcissistic characteristics, loneliness, interpersonal problems, and psychological distress can reinforce one another, illustrating how personality vulnerability may become more impairing in the presence of relational disconnection (Kealy et al., 2023). Although narcissistic and histrionic patterns differ, both may involve dependence on interpersonal feedback and difficulties maintaining stable self-esteem, making relational distress a central clinical outcome.

The quality of interpersonal relationships is influenced by emotion regulation, mindfulness, communication skills, and the ability to identify and express emotional experiences. Mindfulness and cognitive emotion-regulation strategies have been associated with relationship quality and alexithymia among couples experiencing communication problems, suggesting that greater awareness and more adaptive management of emotions may protect interpersonal functioning (Abdollahi Charmahini & A'Rab Shibani, 2024). Training based on emotional and social competencies has likewise been examined as a means of improving social adjustment and psychological well-being among couples with communication difficulties (Radi Famian, 2024). Premarital counseling has also been reported to modify dysfunctional relational beliefs and improve distress tolerance among couples preparing for marriage, further indicating that interpersonal beliefs and emotional endurance are modifiable through structured intervention (Enayati & Amirkhanlou, 2023). These findings are relevant to dental students with histrionic personality traits because relational difficulties in this group may not be caused solely by stable personality characteristics; they may also be maintained by maladaptive cognitions, ineffective emotion-regulation strategies, and limited tolerance of interpersonal discomfort. Therefore, interventions that simultaneously address thoughts, emotions, behaviors, and relational responses may be especially useful.

Cognitive behavioral therapy is one of the most widely supported psychological treatments for emotional and behavioral disorders. It is based on the premise that emotional distress and maladaptive behavior are influenced by biased interpretations, dysfunctional beliefs, and learned behavioral patterns. Through cognitive restructuring, behavioral experiments, exposure, problem-solving, and

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skills training, cognitive behavioral therapy helps individuals identify automatic thoughts, test the validity of maladaptive assumptions, and develop more adaptive responses. Evidence continues to support cognitive behavioral therapy for anxiety-related conditions, particularly when treatment includes structured exposure to feared experiences and modification of avoidance-maintaining beliefs (Kaczkurkin & Foa, 2022). The approach may be relevant to histrionic personality traits because these individuals may hold rigid beliefs such as "I must be noticed to be valued," "If others disagree with me, they are rejecting me," or "I cannot tolerate being ignored." These beliefs may produce exaggerated emotional reactions and unstable interpersonal behavior. Cognitive behavioral therapy can help individuals evaluate such beliefs, reduce catastrophizing and personalization, and practice more balanced interpersonal responses.

Cognitive behavioral therapy has also demonstrated effectiveness in improving emotion regulation and reducing repetitive negative thinking. An intervention among adolescents from divorced families showed that cognitive behavioral therapy could reduce rumination and enhance cognitive emotion regulation, both of which are relevant to distress tolerance and relational stability (Noursideh & Zarei, 2024). Rumination may prolong emotional arousal and reinforce perceived interpersonal injury, whereas adaptive cognitive reappraisal can reduce the intensity of distress and improve behavioral control. Psychotherapy research further indicates that meaningful change depends not only on symptom reduction but also on shifts in emotional processing, self-understanding, and interpersonal behavior (Babl et al., 2023). From this perspective, cognitive behavioral therapy may improve distress tolerance by changing the meaning attributed to uncomfortable emotions and may reduce relational distress by modifying the thoughts and behavioral strategies that escalate interpersonal conflict.

Dialectical behavior therapy offers a second relevant approach. Originally developed for individuals with severe emotion dysregulation and chronic self-destructive behavior, dialectical behavior therapy integrates behavioral change strategies with acceptance, mindfulness, and dialectical principles. Its major skills modules include mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. These components correspond closely to the difficulties that may be experienced by students with histrionic traits. Mindfulness can help participants observe emotions without immediately acting on them; distress-tolerance skills can reduce impulsive attempts to escape emotional discomfort; emotion-regulation skills can decrease affective instability; and interpersonal-effectiveness training can improve assertiveness, boundary setting, conflict management, and self-respect. A randomized clinical trial comparing shorter and longer courses of dialectical behavior therapy for borderline personality disorder demonstrated that a six-month intervention could be noninferior to a twelve-month program on several major clinical outcomes, supporting the clinical effectiveness and adaptability of this treatment model (McMain et al., 2022). Although students with histrionic traits may not meet the criteria for borderline personality disorder, they may benefit from the same skills when emotional intensity and interpersonal reactivity are central problems.

Evidence also supports dialectical behavior therapy for increasing distress tolerance and reducing maladaptive cognitive and emotional processes. Among patients with obsessive-compulsive disorder, dialectical behavior therapy improved distress tolerance and reduced irrational beliefs and anger rumination (Rahmanian et al., 2024). A systematic review of children and adolescents with self-harm and suicidal ideation similarly concluded that dialectical behavior therapy can reduce psychological distress by strengthening emotion regulation and crisis-management skills (Shahhosseini et al., 2025). These findings support the idea that dialectical behavior therapy may be effective across diagnostic categories when poor distress tolerance and emotion dysregulation are prominent. In medical students, both cognitive behavioral therapy and dialectical behavior therapy have been investigated as strategies for enhancing psychological resources, with comparative evidence suggesting that the two approaches may influence resilience-related capacities through partly distinct mechanisms (Dong et al., 2024). Dialectical behavior therapy may have an advantage when the primary difficulty involves rapid emotional escalation and unstable interpersonal behavior because it directly combines acceptance of emotional experience with practical strategies for changing ineffective responses.

Dialectical behavior therapy has also demonstrated potential for improving relationship patterns. A comparative study among women affected by marital infidelity found that dialectical behavior therapy and emotion-focused therapy improved communication patterns and marital intimacy, indicating that the interpersonal-effectiveness and emotion-regulation components of dialectical behavior therapy can influence relationship quality (Badanfiroz et al., 2025). This

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is particularly relevant to relational distress in students with histrionic personality traits, who may experience difficulties balancing closeness with autonomy, expressing needs directly, tolerating disagreement, and preserving self-respect during conflict. Rather than attempting to eliminate emotion, dialectical behavior therapy teaches individuals to validate their internal experience while choosing responses that are consistent with long-term goals. This dialectical balance may reduce dramatic or impulsive reactions without invalidating the person's need for connection.

A third potentially useful intervention is paradoxical exposure or paradox therapy. Paradoxical interventions deliberately encourage, prescribe, exaggerate, or schedule a symptom or feared internal experience rather than directly attempting to suppress it. The therapeutic rationale is that excessive efforts to control unwanted thoughts, emotions, or behaviors can paradoxically intensify them. By intentionally approaching the feared experience, the individual may reduce anticipatory anxiety, weaken avoidance, gain psychological distance from the symptom, and discover that the experience is more tolerable and controllable than expected. A meta-analysis of paradoxical interventions found evidence that such strategies can produce meaningful therapeutic effects across a range of psychological problems (Peluso & Freund, 2023). Paradoxical methods may be particularly suitable for individuals who have become trapped in repetitive attempts to avoid distress or control how others respond to them. For a student with histrionic traits, deliberately tolerating periods of reduced attention, inviting manageable emotional discomfort, or refraining from reassurance-seeking may weaken the cycle connecting distress, dramatic expression, and relational conflict.

Empirical studies have reported promising outcomes for paradox therapy in anxiety-related and health-related conditions. Paradox therapy has been found to reduce symptoms of generalized anxiety disorder among married women, suggesting that deliberate confrontation with worry and symptom-prescription techniques may reduce avoidance and the perceived uncontrollability of anxiety (Gol Karnabil & Asayesh, 2024). It has also been used to address fear of cancer recurrence, death anxiety, and treatment adherence among patients with cancer, indicating potential applicability to persistent fear and attempts to control distressing internal experiences (Mardani et al., 2023). Comparative research has shown that both paradox therapy and cognitive behavioral therapy can influence internal coherence, ego strength, and panic symptoms, although their mechanisms and relative effects may differ (Najafi Dehaghani et al., 2024). These findings indicate that paradoxical methods may improve distress tolerance by changing the individual's relationship with uncomfortable emotions and may reduce relational distress by disrupting repetitive patterns of emotional control, avoidance, and interpersonal reaction.

Despite the theoretical relevance of these three approaches, direct comparative research remains limited. Cognitive behavioral therapy primarily emphasizes the modification of maladaptive beliefs and behaviors, dialectical behavior therapy combines acceptance with explicit training in distress tolerance and interpersonal effectiveness, and paradoxical exposure seeks to disrupt symptom-maintaining control and avoidance cycles. Each approach may therefore affect distress tolerance and relational distress through a different pathway. Cognitive behavioral therapy may be more effective when dysfunctional interpretations are the main mechanism; dialectical behavior therapy may be more effective when emotional instability and interpersonal impulsivity are prominent; and paradoxical exposure may be useful when excessive control, symptom avoidance, and fear of distress maintain the problem. Existing psychotherapy studies increasingly emphasize the need to identify change processes rather than assuming that all effective treatments operate in the same manner (Babl et al., 2023). Comparative designs can clarify whether one treatment produces stronger or more durable outcomes for a specific population.

Several Iranian studies have examined distress tolerance, communication difficulties, emotional regulation, and psychotherapy, but relatively little attention has been given to dental students with histrionic personality traits. Research has shown that spirituality-based interventions can improve distress tolerance and self-efficacy among mothers of children with learning disorders, supporting the broader modifiability of distress tolerance (Sharifi & Nouri, 2023). Studies of counseling, mindfulness, emotion regulation, and relationship quality have likewise indicated that emotional and interpersonal capacities respond to psychological training (Abdollahi Charmahini & A'Rab Shibani, 2024; Enayati & Amirkhanlou, 2023). Nevertheless, findings from couples, clinical patients, adolescents, or caregivers cannot automatically be generalized to dental students. The academic and clinical conditions of dental education require sustained concentration, tolerance of uncertainty, interpersonal professionalism, and emotional composure. Furthermore, the interaction between histrionic traits and

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professional training may create distinctive difficulties that require targeted intervention.

The comparison of cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure is therefore important for both theoretical and practical reasons. Theoretically, it can clarify whether cognitive restructuring, acceptance-and-skills training, or paradoxical confrontation is more strongly associated with improvement in distress tolerance and relational functioning. Practically, identifying the most effective intervention can guide university counseling centers, dental schools, and mental-health professionals in selecting brief and structured treatments for students whose personality characteristics interfere with their well-being or educational functioning. Because all three approaches are potentially adaptable to group formats and time-limited university settings, comparative evidence may also support more efficient allocation of psychological services. Accordingly, the present study aimed to compare the effectiveness of cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy in increasing distress tolerance and reducing relational distress among dental students with histrionic personality traits.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with pretest, posttest, and follow-up assessments and a control group. The research design comprised three intervention groups receiving cognitive behavioral therapy, dialectical behavior therapy, or paradoxical exposure therapy, together with one control group. All four groups completed the outcome measures at the pretest and posttest stages, and the assessments were repeated 45 days after the completion of the interventions to evaluate the maintenance of treatment effects. The statistical population consisted of all dental students with histrionic personality traits who attended university-affiliated hospital centers in Isfahan, Iran, during autumn 2024. Participants were recruited through convenience sampling. After obtaining the required authorization from the university, approval from the relevant institutional authorities, and research ethics clearance, the researchers attended the dental faculties and affiliated clinical centers in Isfahan. The Millon Clinical Multiaxial Inventory–IV was administered to volunteer dental students as the initial screening instrument. Students who obtained scores indicative of histrionic personality traits were subsequently evaluated according to the study eligibility criteria. Following screening and clinical confirmation, 60 eligible students were selected and randomly assigned in equal numbers to the cognitive behavioral therapy group, dialectical behavior therapy group, paradoxical exposure therapy group, or control group, with 15 participants in each group. The inclusion criteria were the presence of histrionic personality traits based on the Millon Clinical Multiaxial Inventory–IV, confirmation of these traits by a psychiatrist or clinical psychologist, willingness to participate in the study and provide informed consent, commitment to attending the intervention sessions, absence of other major psychiatric disorders, no current use of psychiatric medication, and no history of substance or psychotropic drug use during the study period. Participants were excluded if they were absent from more than two intervention sessions, withdrew their consent, initiated another psychological treatment, or developed a condition that prevented continued participation. Participants were informed about the study objectives, the voluntary nature of participation, the confidentiality of their information, and their right to withdraw from the study without academic or clinical consequences. The control group received no structured psychological intervention during the study period and continued to receive routine services available at the university or hospital centers.

2.2. Measures

The Millon Clinical Multiaxial Inventory–IV was used to screen participants for histrionic personality traits and determine their initial eligibility for participation. The Millon inventory is a self-report clinical personality assessment developed for individuals aged 18 years and older and is designed to evaluate clinical personality patterns, severe personality pathology, and major clinical syndromes. The instrument contains 195 true–false items and includes validity indicators intended to identify inconsistent, exaggerated, or defensive response styles. Its personality scales assess patterns corresponding to established clinical personality constructs, including the histrionic personality pattern. Scores are generally transformed into base-rate scores rather than conventional standardized scores, and elevated base-rate scores indicate the probable presence or clinical prominence of a personality pattern. In the present study, the score obtained on the histrionic personality scale was used as the primary screening criterion, while the final eligibility decision was

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supported by clinical evaluation conducted by a psychiatrist or qualified psychologist. The Persian version of the Millon inventory has previously been translated, culturally adapted, and used in Iranian clinical and research settings, with acceptable evidence regarding its reliability and construct-related validity. The instrument was used only for participant screening and group eligibility and was not treated as an outcome measure.

The Distress Tolerance Scale developed by Simons and Gaher in 2005 was used to assess participants' perceived capacity to withstand and manage negative psychological states. This self-report instrument contains 15 items and evaluates four dimensions of distress tolerance, including tolerance, absorption, appraisal, and regulation. The tolerance dimension reflects the perceived ability to endure emotional distress, whereas absorption measures the extent to which distress dominates an individual's attention and disrupts functioning. The appraisal dimension assesses personal judgments and attitudes toward the experience of distress, and the regulation dimension evaluates efforts to avoid, reduce, or rapidly control unpleasant emotional states. Items are rated on a five-point Likert scale ranging from complete disagreement to complete agreement. After reverse-scored items are recoded, higher total scores represent a greater ability to tolerate psychological distress, whereas lower scores indicate reduced distress tolerance and a stronger tendency to experience negative emotions as intolerable. A score above 45 is generally interpreted as reflecting comparatively higher distress tolerance, while a score below 45 indicates comparatively lower tolerance. The original developers reported acceptable internal consistency for the total scale and its subscales, with a Cronbach's alpha coefficient of approximately .82 for the overall score and coefficients of approximately .70 to .82 for the component dimensions. The Persian version has also demonstrated acceptable internal consistency in Iranian samples, with a reported Cronbach's alpha coefficient of approximately .71. In the present study, the total distress tolerance score was considered the principal outcome, with higher posttest and follow-up scores indicating therapeutic improvement.

The 32-item Inventory of Interpersonal Problems was administered to assess relational distress and difficulties experienced in interpersonal interactions. The original Inventory of Interpersonal Problems was developed by Barkham and colleagues as a comprehensive measure of recurrent interpersonal difficulties, and its abbreviated 32-item form was designed to provide a more efficient assessment while retaining the principal interpersonal domains. The questionnaire evaluates eight dimensions consisting of sociability, assertiveness, participation, supportiveness, aggression, openness, consideration of others, and dependency. These dimensions represent difficulties associated with approaching others, expressing needs and boundaries, becoming involved in relationships, providing emotional support, managing hostile reactions, disclosing personal experiences, attending to other people's needs, and maintaining autonomy in close relationships. Items are scored on a five-point Likert scale ranging from "not at all" to "extremely," and respondents indicate the degree to which each interpersonal behavior or problem characterizes their current functioning. Higher scores indicate more severe interpersonal problems and greater relational distress, whereas lower scores indicate more adaptive interpersonal functioning. The original version demonstrated acceptable internal consistency, with Cronbach's alpha coefficients for the subscales generally ranging from .71 to .86 and an overall reliability coefficient of approximately .85. Studies of the Persian version have also supported its reliability and convergent validity. Evidence of convergent validity has been reported through significant positive associations between interpersonal-problem scores and related constructs such as alexithymia and emotional-processing difficulties. In the present study, the total score was used as the principal indicator of relational distress, and reductions in posttest and follow-up scores were interpreted as improvements in interpersonal functioning.

2.3. Interventions

The cognitive behavioral therapy intervention was conducted according to the general principles of standard cognitive therapy protocols for personality-related emotional and interpersonal difficulties. The intervention consisted of ten weekly sessions delivered to the participants assigned to the cognitive behavioral therapy group. The initial session focused on establishing the therapeutic alliance, explaining the structure and rationale of cognitive behavioral therapy, clarifying confidentiality and group rules, and identifying the participants' major emotional and interpersonal difficulties. The second session introduced the cognitive model and helped participants understand the relationships among situations, automatic thoughts, emotions, physiological reactions, and behavioral responses. The third session focused on identifying automatic thoughts associated with rejection, insufficient attention, criticism,

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interpersonal conflict, and the need for approval. In the fourth session, participants learned to recognize cognitive distortions commonly involved in histrionic behavioral patterns, including catastrophizing, mind reading, emotional reasoning, personalization, dichotomous thinking, and overdependence on external validation. The fifth session trained participants to evaluate evidence for and against maladaptive thoughts and to develop more balanced alternative interpretations. The sixth session addressed deeper assumptions and conditional beliefs concerning attractiveness, approval, lovability, abandonment, and personal worth. The seventh session incorporated behavioral experiments, self-monitoring, and response-delay techniques to reduce impulsive, attention-seeking, or emotionally exaggerated reactions. The eighth session focused on communication skills, assertiveness, active listening, appropriate emotional expression, and the establishment of interpersonal boundaries. The ninth session emphasized problem-solving, emotion-management strategies, and the application of cognitive and behavioral skills to stressful academic, clinical, and relational situations encountered by dental students. The final session reviewed therapeutic gains, identified remaining high-risk situations, consolidated individualized coping strategies, and developed a relapse-prevention plan. Homework assignments were provided between sessions, including thought records, behavioral observations, cognitive restructuring exercises, and planned interpersonal experiments. The therapist reviewed homework at the beginning of each subsequent session to reinforce skill acquisition and promote the generalization of treatment effects to everyday situations.

The dialectical behavior therapy intervention was based on the standard skills-training components of dialectical behavior therapy and was adapted to the emotional-regulation and interpersonal needs of dental students with histrionic personality traits. The program consisted of ten weekly sessions. The first session introduced the dialectical framework, established group agreements, explained the balance between acceptance and change, and identified behaviors that interfered with emotional and relational functioning. The second session focused on mindfulness skills, particularly observing, describing, and participating in present-moment experiences without immediate judgment or impulsive action. The third session continued mindfulness training and taught participants to distinguish emotional mind, reasonable mind, and wise mind when making interpersonal decisions. The fourth session introduced distress-tolerance skills for managing acute emotional arousal without engaging in maladaptive reactions, excessive reassurance seeking, dramatic behavior, or interpersonal escalation. Participants practiced distraction, self-soothing, grounding, paced breathing, and temporary crisis-survival strategies. The fifth session addressed acceptance-oriented distress-tolerance skills, including radical acceptance, willingness, and recognition of realities that could not be immediately changed. The sixth session introduced emotion-regulation skills and helped participants identify emotions, their prompting events, associated interpretations, physiological components, action tendencies, and behavioral consequences. The seventh session emphasized reducing emotional vulnerability through sleep regulation, self-care, balanced daily routines, and engagement in activities that create mastery and positive emotional experiences. The eighth session trained participants in opposite action and other methods for modifying intense emotions when emotional responses were inconsistent with the facts or ineffective in achieving long-term goals. The ninth session focused on interpersonal effectiveness, including asking for needs, refusing inappropriate demands, preserving self-respect, validating others, negotiating conflict, and maintaining relationships without excessive dependency or attention-seeking behavior. The tenth session integrated mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness skills, reviewed participants' progress, and developed personalized plans for maintaining treatment gains and managing future crises. Participants completed weekly monitoring forms and practiced the taught skills between sessions. Particular attention was given to applying the skills in academic, clinical, family, and peer relationships, as well as to situations involving criticism, perceived rejection, lack of attention, or emotional disappointment.

The paradoxical exposure therapy intervention was implemented as a structured ten-session program based on established paradoxical techniques, including deliberate symptom prescription, paradoxical intention, systematic confrontation with feared internal experiences, and interruption of maladaptive control efforts. The first session was devoted to establishing a therapeutic relationship, clarifying the nature of paradoxical treatment, identifying target symptoms, and explaining how excessive attempts to suppress or control unwanted emotions may intensify them. The second session helped participants identify recurrent cycles of emotional arousal, attention seeking, interpersonal

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reassurance, avoidance, and escalating relational reactions. In the third session, participants were trained to observe distressing thoughts and emotions without attempting to eliminate them and to record the conditions under which relational distress intensified. The fourth session introduced paradoxical intention, through which participants were instructed to deliberately evoke, exaggerate, or invite selected emotional experiences in a controlled and time-limited manner rather than attempting to avoid them. The fifth session employed symptom-prescription exercises in which participants intentionally scheduled the expression or mental rehearsal of specific distress reactions at predetermined times and under clearly defined conditions. The sixth session focused on paradoxical exposure to feared interpersonal situations, such as not receiving immediate attention, tolerating delayed responses, accepting disagreement, or remaining in situations where approval was uncertain. The seventh session addressed response prevention by asking participants to refrain from their usual compensatory behaviors, including repeated reassurance seeking, emotional dramatization, impulsive communication, or attempts to force interpersonal closeness. The eighth session focused on recognizing the humorous, exaggerated, or self-defeating aspects of dysfunctional emotional cycles and encouraged psychological distance from rigid symptom-control efforts. The ninth session expanded paradoxical exercises to real-life academic, family, and peer contexts and helped participants compare the consequences of deliberate acceptance with those of avoidance and excessive control. The final session reviewed changes in distress tolerance and interpersonal functioning, consolidated the most effective paradoxical exercises, and developed a maintenance and relapse-prevention plan. Participants completed between-session assignments involving scheduled symptom practice, deliberate acceptance of manageable discomfort, exposure to interpersonal uncertainty, and written evaluation of changes in emotional intensity. All exercises were implemented gradually and within tolerable limits, and participants were instructed to discontinue an exercise and inform the therapist if it produced severe or unmanageable distress.

2.4. Data Analysis

The collected data were analyzed using IBM SPSS Statistics version 27. Before conducting inferential analyses, the dataset was examined for missing values, data-entry errors, outliers, and compliance with the assumptions required for parametric analysis. Descriptive indices, including the mean and standard deviation, were calculated for distress tolerance and relational distress at the pretest, posttest, and follow-up stages in each study group. The normality of score distributions was evaluated using appropriate statistical and graphical procedures, and the homogeneity of error variances was examined using Levene's test. Because the dependent variables were measured repeatedly across three time points, a mixed repeated-measures analysis of variance was conducted to examine the within-subject effect of time, the between-subject effect of group, and the time-by-group interaction. Mauchly's test was used to evaluate the sphericity assumption. When the assumption of sphericity was violated, corrected degrees of freedom based on the Greenhouse–Geisser adjustment were applied. A significant time-by-group interaction was interpreted as evidence that changes in the dependent variables across the assessment stages differed among the cognitive behavioral therapy, dialectical behavior therapy, paradoxical exposure therapy, and control groups. Following significant omnibus effects, pairwise and post hoc comparisons with Bonferroni adjustment were conducted to identify differences between assessment stages and determine which intervention groups differed significantly from the control group and from one another. Effect sizes were reported using partial eta squared to indicate the magnitude of the observed effects. All statistical tests were two-tailed, and the level of statistical significance was set at $p < .05$, while results with $p < .01$ were interpreted as providing stronger evidence of statistically significant differences.

3. Findings and Results

The study included 60 dental students with histrionic personality traits who were randomly assigned to four groups of 15 participants each. In the cognitive behavioral therapy group, 8 participants were women and 7 were men, whereas the paradoxical exposure therapy group included 12 women and 3 men. In contrast, men constituted the majority of the dialectical behavior therapy group, with 11 men and 4 women, and the control group, with 8 men and 7 women. Regarding age, the largest proportion of participants in the cognitive behavioral therapy group was between 26 and 30 years of age, accounting for 7 participants. The 26–30-year age category was also the most frequent in the paradoxical exposure therapy group, with 8 participants, whereas the largest age category in the dialectical behavior therapy group

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was 22–25 years, comprising 7 participants. Thus, although the four groups were equal in sample size, some differences were observed in their sex and age distributions.

Table 1

Descriptive Statistics for Distress Tolerance and Relational Distress across the Study Groups and Assessment Stages

Variable	Group	Pretest, M	Pretest, SD	Posttest, M	Posttest, SD	Follow-up, M	Follow-up, SD
Distress tolerance	Cognitive behavioral therapy	46.36	2.53	36.26	1.66	35.13	2.35
	Dialectical behavior therapy	36.60	2.35	43.73	1.98	45.26	2.93
	Paradoxical exposure therapy	36.46	2.13	62.60	1.95	62.73	1.79
	Control	38.86	2.44	50.00	1.88	52.80	1.52
Relational distress	Cognitive behavioral therapy	54.80	4.64	56.66	3.75	56.53	3.94
	Dialectical behavior therapy	55.46	4.24	33.00	3.02	32.66	3.03
	Paradoxical exposure therapy	54.20	4.31	21.20	1.47	22.46	1.95
	Control	54.86	4.13	44.20	3.29	45.33	3.51

As presented in Table 1, the mean scores of distress tolerance and relational distress changed across the pretest, posttest, and 45-day follow-up assessments. The descriptive findings indicated that the magnitude and direction of change differed among the four groups. For distress tolerance, the largest observed increase from pretest to posttest was recorded in the paradoxical exposure therapy group, and this change was maintained at follow-up. The dialectical behavior therapy group also showed an increase in distress tolerance from pretest to posttest and a further increase at follow-up. For relational distress, substantial reductions were observed in the dialectical behavior therapy and paradoxical exposure therapy groups at posttest, with the lower scores generally being maintained during the follow-up period. Relatively small differences between the posttest and follow-up scores in the intervention groups suggested that most treatment-related changes remained stable over the 45-day follow-up period. Nevertheless, inferential analyses were required to determine whether the observed changes were statistically significant and whether their patterns differed among the groups.

Before conducting the mixed repeated-measures analysis of variance, the relevant statistical assumptions were evaluated. The results of the Kolmogorov–Smirnov and Shapiro–Wilk tests supported the approximate normality of the distributions of distress tolerance and relational distress scores across the groups and assessment stages. Examination of scatterplots supported the linearity of the relationships among repeated measurements, and Levene's test indicated that the homogeneity-of-variance assumption was satisfied. The absence of significant baseline differences was also examined using one-way analysis of variance, and the findings supported the comparability of the groups at the pretest stage. However, Mauchly's test of sphericity was significant for both distress tolerance, $W = .717$, $\chi^2(2) = 18.290$, $p = .001$, and relational distress, $W = .555$, $\chi^2(2) = 32.372$, $p = .001$. Therefore, the sphericity assumption was violated for both dependent variables. Consequently, the Greenhouse–Geisser correction was applied to the degrees of freedom for the within-subject effects. The Greenhouse–Geisser epsilon coefficients were .779 for distress tolerance and .692 for relational distress.

Table 2

Mixed Repeated-Measures Analysis of Variance for Distress Tolerance and Relational Distress

Variable	Effect	SS	df	MS	F	p	Partial η^2
Distress tolerance	Time	5280.211	1.559	3387.015	1074.288	< .001	.950
	Time × group	3871.211	4.677	827.735	262.540	< .001	.934
	Group	2641.519	3	880.506	288.340	< .001	.939
	Between-subject error	171.007	56	3.054	—	—	—
Relational distress	Time	10024.233	1.384	7241.950	1054.830	< .001	.950
	Time × group	6649.589	4.153	1601.319	233.241	< .001	.926
	Group	4550.065	3	1516.688	158.820	< .001	.895
	Between-subject error	534.785	56	9.550	—	—	—

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The mixed repeated-measures analysis of variance showed a significant main effect of time on distress tolerance, $F = 1074.29$, $p < .001$, partial $\eta^2 = .950$, indicating that distress-tolerance scores differed significantly across at least two of the pretest, posttest, and follow-up assessments. The time-by-group interaction was also significant, $F = 262.54$, $p < .001$, partial $\eta^2 = .934$, demonstrating that the pattern of change in distress tolerance over time differed significantly among the cognitive behavioral therapy, dialectical behavior therapy, paradoxical exposure therapy, and control groups. Furthermore, the between-group effect was significant, $F(3, 56) = 288.34$, $p < .001$, partial $\eta^2 = .939$, indicating substantial overall differences among the four groups. For relational distress, the main effect of time was significant, $F = 1054.83$, $p < .001$, partial $\eta^2 = .950$. The time-by-group interaction was similarly significant, $F = 233.24$, $p < .001$, partial $\eta^2 = .926$, showing that changes in relational distress across the three assessment stages were dependent on group membership. The between-group effect for relational distress was also statistically significant, $F(3, 56) = 158.82$, $p < .001$, partial $\eta^2 = .895$. The partial eta-squared coefficients indicated that time, treatment group, and their interaction accounted for large proportions of variance in both outcome variables.

Table 3

Bonferroni Post-Hoc Comparisons for Distress Tolerance and Relational Distress

Variable	Comparison	Absolute Mean Difference	SE	p	95% CI
Distress tolerance	Control vs. cognitive behavioral therapy	5.911	0.638	< .001	[4.166, 7.656]
	Control vs. dialectical behavior therapy	17.978	0.638	< .001	[16.232, 19.723]
	Control vs. paradoxical exposure therapy	11.267	0.638	< .001	[9.521, 13.012]
	Cognitive behavioral therapy vs. dialectical behavior therapy	12.067	0.638	< .001	[10.321, 13.812]
	Cognitive behavioral therapy vs. paradoxical exposure therapy	5.356	0.638	< .001	[3.610, 7.101]
	Dialectical behavior therapy vs. paradoxical exposure therapy	6.711	0.638	< .001	[4.966, 8.456]
Relational distress	Control vs. cognitive behavioral therapy	15.622	1.128	< .001	[12.536, 18.709]
	Control vs. dialectical behavior therapy	23.378	1.128	< .001	[20.291, 26.464]
	Control vs. paradoxical exposure therapy	7.867	1.128	< .001	[4.780, 10.953]
	Cognitive behavioral therapy vs. dialectical behavior therapy	7.756	1.128	< .001	[4.669, 10.842]
	Cognitive behavioral therapy vs. paradoxical exposure therapy	7.756	1.128	< .001	[4.669, 10.842]
	Dialectical behavior therapy vs. paradoxical exposure therapy	15.511	1.128	< .001	[12.425, 18.598]

Bonferroni-adjusted comparisons demonstrated significant differences among all four groups in distress tolerance and relational distress. For distress tolerance, the control group differed significantly from the cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy groups, all p values < .001. Significant differences were also observed between each pair of intervention groups, indicating that the three treatments did not produce effects of equal magnitude. Based on the adjusted group comparisons, dialectical behavior therapy produced the greatest improvement in distress tolerance, paradoxical exposure therapy produced the next-largest improvement, and cognitive behavioral therapy produced the smallest improvement. For relational distress, the control group differed significantly from all three treatment groups, and all pairwise comparisons among the treatment groups were significant, $p < .001$. The adjusted comparisons indicated that dialectical behavior therapy produced the greatest overall reduction in relational distress, cognitive behavioral therapy ranked next, and paradoxical exposure therapy produced the smallest adjusted reduction.

The Bonferroni comparisons across assessment stages further showed that overall distress-tolerance scores differed significantly between the pretest and posttest assessments, mean difference = −11.050, SE = 0.230, $p < .001$, and between the pretest and follow-up assessments, mean difference = −11.883, SE = 0.353, $p < .001$. A significant difference was also found between the posttest and follow-up stages, mean difference = −0.833, SE = 0.261, $p = .007$, indicating that distress tolerance continued to change during the follow-up period. For relational distress, significant differences were observed between pretest and posttest, mean difference = 16.067, SE = 0.454, $p < .001$, and between pretest and follow-up, mean difference = 15.583, SE = 0.465, $p < .001$. However, the difference between posttest and follow-up was not significant, mean difference = −0.483, SE = 0.230, $p = .120$, indicating that the reduction in relational distress achieved by the interventions was generally maintained during follow-up.

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Within-group comparisons showed no significant changes in either distress tolerance or relational distress across the three assessment stages in the control group, all p values > .05. In the cognitive behavioral therapy group, significant differences were found between pretest and posttest and between pretest and follow-up for both outcome variables, all p values < .001, whereas the posttest-to-follow-up differences were not significant, indicating that the treatment effects were maintained. In the dialectical behavior therapy group, distress tolerance and relational distress changed significantly from pretest to posttest and from pretest to follow-up, all p values < .001. The posttest-to-follow-up difference was not significant for distress tolerance, p > .05, whereas a small but significant difference was observed for relational distress, p = .048. In the paradoxical exposure therapy group, both outcomes changed significantly between pretest and posttest and between pretest and follow-up, all p values < .001. Distress tolerance also differed significantly between posttest and follow-up, p < .001, whereas the posttest-to-follow-up difference in relational distress was not significant, p = .062. Collectively, the findings indicated that all three interventions were effective in increasing distress tolerance and reducing relational distress among dental students with histrionic personality traits and that the improvements were generally maintained at the 45-day follow-up. The comparative analyses identified dialectical behavior therapy as the most effective intervention across the two outcomes.

4. Discussion and Conclusion

The present study compared the effectiveness of cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy in improving distress tolerance and reducing relational distress among dental students with histrionic personality traits. The findings showed significant effects of time, group, and the interaction between time and group on both outcome variables. These results indicated that changes in distress tolerance and relational distress across the pretest, posttest, and follow-up stages were not identical in the four groups and were meaningfully associated with the type of intervention received. Bonferroni comparisons further demonstrated that all three intervention groups differed significantly from the control group, confirming that cognitive behavioral therapy, dialectical behavior therapy, and paradoxical exposure therapy were effective in increasing distress tolerance and decreasing relational distress. The maintenance of most changes at the 45-day follow-up also suggested that the therapeutic benefits were not limited to the immediate post-intervention assessment. Comparative findings indicated that dialectical behavior therapy produced the greatest overall improvement in distress tolerance and the strongest reduction in relational distress. Cognitive behavioral therapy produced the smallest improvement in distress tolerance, whereas paradoxical exposure therapy produced the smallest reduction in relational distress. These findings support the general proposition that interventions targeting emotion regulation, maladaptive cognition, experiential avoidance, and interpersonal behavior can improve psychological functioning in students with histrionic personality traits.

The effectiveness of cognitive behavioral therapy in improving distress tolerance can be explained through its emphasis on identifying and modifying dysfunctional thoughts that intensify emotional discomfort. Individuals with histrionic personality traits may interpret criticism, reduced attention, disagreement, or delayed interpersonal responses as evidence of rejection, worthlessness, or loss of affection. Such appraisals can magnify ordinary emotional discomfort and create the belief that distress is intolerable. Cognitive behavioral therapy helps participants recognize automatic thoughts, distinguish interpretations from facts, examine the evidence supporting their beliefs, and generate more balanced alternatives. As catastrophic and personalized interpretations weaken, emotional experiences may become less threatening and easier to tolerate. This explanation is consistent with evidence showing that cognitive behavioral therapy reduces rumination and improves cognitive emotion regulation by changing maladaptive patterns of interpretation and repetitive thinking (Noursideh & Zarei, 2024). The findings also align with broader evidence supporting cognitive behavioral therapy for anxiety-related problems, particularly when maladaptive beliefs and avoidance behaviors maintain emotional distress (Kaczkurkin & Foa, 2022). By engaging in behavioral experiments and remaining in situations involving criticism, uncertainty, or reduced attention, participants may have learned that emotional discomfort can be endured without immediate escape or dramatic response.

The reduction in relational distress following cognitive behavioral therapy can similarly be understood through changes in interpersonal beliefs and behavioral reactions. Histrionic personality traits may be associated with assumptions such as “I must attract attention to be accepted,” “Others must respond to me immediately,” or “Disagreement means rejection.” These beliefs can lead to

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reassurance seeking, emotional exaggeration, excessive dependency, indirect communication, or conflict escalation. Cognitive restructuring enables individuals to identify the unrealistic and rigid nature of such beliefs, while assertiveness training and behavioral rehearsal provide more adaptive ways of expressing needs and managing disagreement. Evidence from relationship-focused interventions indicates that dysfunctional beliefs about relationships can be modified and that such modification is accompanied by improved distress tolerance and interpersonal adjustment (Enayati & Amirkhanlou, 2023). Research has also shown that mindfulness and adaptive cognitive emotion regulation are associated with better relationship quality and lower emotional communication difficulties among individuals experiencing relational problems (Abdollahi Charmahini & A'Rab Shibani, 2024). Therefore, the observed reduction in relational distress may have resulted from the combined modification of distorted interpersonal interpretations and the acquisition of more effective communication behaviors.

Despite its effectiveness, cognitive behavioral therapy produced the smallest improvement in distress tolerance compared with the other interventions. One possible explanation is that cognitive behavioral therapy primarily approaches emotional distress through the evaluation and modification of thoughts, whereas participants with prominent histrionic traits may experience rapid and intense affective activation that occurs before reflective cognitive strategies can be implemented. During emotionally charged interpersonal situations, such individuals may require immediate behavioral and physiological skills for tolerating arousal rather than relying mainly on cognitive reappraisal. Moreover, the need for attention and validation may be maintained not only by conscious beliefs but also by deeply learned patterns of emotional expression and interpersonal reinforcement. Although cognitive behavioral therapy can address these patterns, ten sessions may not have been sufficient to modify longstanding personality-related schemas as strongly as an intervention that directly trains distress-tolerance and emotion-regulation skills. Psychotherapy research indicates that treatment success depends on multiple change processes, including emotional processing, interpersonal learning, behavioral experimentation, and changes in self-understanding (Babl et al., 2023). Thus, cognitive change alone may have been less powerful than the more comprehensive acceptance, crisis-management, and interpersonal-skills components of dialectical behavior therapy.

The effectiveness of dialectical behavior therapy in improving distress tolerance was expected because distress tolerance constitutes one of its principal treatment modules. Participants were taught to observe unpleasant emotional states, accept the temporary presence of distress, and use structured crisis-survival strategies without engaging in impulsive or maladaptive behaviors. For students with histrionic traits, these skills may reduce the tendency to respond to emotional discomfort through dramatic expression, urgent reassurance seeking, attention-seeking behavior, or interpersonal escalation. Mindfulness training may also help individuals notice emotions and thoughts without automatically identifying with or acting upon them. This interpretation is consistent with the theory that distress tolerance reflects contextually situated decisions to approach or avoid discomfort rather than a fixed capacity (Veilleux, 2023). Dialectical behavior therapy may alter these decisions by increasing confidence that distress can be experienced safely and managed effectively. The present findings align with research indicating that dialectical behavior therapy improves distress tolerance and reduces irrational beliefs and anger rumination among clinical populations (Rahmanian et al., 2024). They are also supported by evidence showing that dialectical behavior therapy reduces psychological distress in children and adolescents with severe emotion-regulation problems and self-harming tendencies (Shahhosseini et al., 2025).

The superiority of dialectical behavior therapy in improving distress tolerance may be explained by the direct correspondence between its therapeutic components and the dimensions measured by the Distress Tolerance Scale. The intervention addresses the ability to endure distress, reduces attentional absorption in negative emotion, modifies negative appraisal of distress, and replaces urgent avoidance with adaptive regulation. Rather than requiring the individual to challenge every distressing thought, dialectical behavior therapy teaches that an emotion can be accepted even when the associated situation cannot be immediately changed. Radical acceptance, grounding, self-soothing, paced breathing, and wise-mind decision-making may have provided participants with practical strategies that could be used during academic pressure and interpersonal conflict. Low distress tolerance has been identified as a transdiagnostic mechanism associated with substance-use, eating, and personality disorders (Mattingley et al., 2022). It has also been shown to intensify the relationship between negative affect and maladaptive behaviors such as nonsuicidal self-injury (Slabbert et al., 2022). Although the

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participants in the present study were not selected on the basis of these behaviors, the same mechanism may operate in less severe forms through impulsive communication, dramatic reactions, or avoidance of stressful situations. The strong improvement observed after dialectical behavior therapy therefore supports its relevance for personality-related emotional vulnerability beyond borderline personality disorder.

Dialectical behavior therapy also produced the greatest reduction in relational distress. This result may be attributed to the interpersonal-effectiveness module, which explicitly teaches individuals to ask for what they need, refuse unreasonable demands, preserve self-respect, validate others, and maintain relationships without excessive dependence or aggression. These skills are particularly important for individuals with histrionic traits because their interpersonal behavior may alternate between excessive closeness seeking, emotional persuasion, resentment, and withdrawal. Dialectical behavior therapy provides structured strategies for balancing personal objectives, relationship preservation, and self-respect. It also teaches participants to separate the validity of an emotion from the effectiveness of the behavior used to express it. This distinction may reduce the perception that changing dramatic or impulsive behavior invalidates the person's emotional experience. The present result is consistent with evidence that dialectical behavior therapy improves communication patterns and marital intimacy among individuals experiencing serious relational disruption (Badanfiroz et al., 2025). It also aligns with findings that shorter courses of dialectical behavior therapy can produce substantial improvement in personality-related emotional and interpersonal dysfunction (McMain et al., 2022).

The strong performance of dialectical behavior therapy may also reflect the specific characteristics of dental students. Dental education requires emotional composure, precise decision-making, tolerance of correction, and effective communication with patients, instructors, and peers. Mindfulness and emotion-regulation skills may help students remain focused during stressful clinical situations, while distress-tolerance strategies may prevent emotional arousal from disrupting task performance. Comparative research among medical students has shown that both cognitive behavioral therapy and dialectical behavior therapy can improve psychological resources, although dialectical behavior therapy may offer particular advantages when emotional regulation and resilience are central treatment targets (Dong et al., 2024). Because the present participants had histrionic traits, the dialectical combination of acceptance and change may have been especially suitable. Purely change-oriented strategies can sometimes be experienced as criticism or rejection by individuals who are highly sensitive to evaluation. Validation may increase treatment engagement, while behavioral change strategies simultaneously reduce maladaptive responses. This balance may explain why dialectical behavior therapy yielded stronger effects than cognitive behavioral therapy and paradoxical exposure therapy.

Paradoxical exposure therapy was also effective in improving distress tolerance. This finding can be explained through its deliberate reversal of avoidance and control efforts. Individuals who believe that distress must be immediately eliminated often become more vigilant toward internal discomfort, and this vigilance can intensify anxiety and emotional arousal. Paradoxical exposure asks participants to intentionally approach, invite, or schedule the unwanted experience rather than attempting to suppress it. By voluntarily confronting distress, participants may develop a sense of agency and discover that the emotion is temporary and manageable. The symptom loses some of its power when it is deliberately produced rather than feared and resisted. Meta-analytic evidence indicates that paradoxical interventions can produce meaningful reductions in psychological symptoms across different treatment contexts (Peluso & Freund, 2023). Studies have also supported paradox therapy for generalized anxiety symptoms (Gol Karnabil & Asayesh, 2024), panic-related difficulties and ego functioning (Najafi Dehaghani et al., 2024), and fear-related distress among patients with cancer (Mardani et al., 2023). The present findings extend this evidence by suggesting that paradoxical methods may also strengthen the capacity to tolerate emotional discomfort in students with personality-related vulnerabilities.

Paradoxical exposure may be particularly relevant to histrionic personality traits because attention-seeking and emotional amplification can become part of a self-reinforcing control cycle. An individual may exaggerate distress to obtain reassurance or restore interpersonal attention, but repeated reassurance can reduce opportunities to learn that distress is tolerable without external regulation. By scheduling emotional expression, exaggerating feared reactions in a controlled setting, or intentionally remaining in situations where approval is uncertain, participants may become less dependent on spontaneous dramatic behavior. Paradoxical exercises can also create psychological distance and reveal the repetitive or self-defeating nature of a

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symptom pattern. This process may increase insight, which is clinically relevant because insight into maladaptive motives and interpersonal consequences may be limited in histrionic personality functioning (Starzomska-Romanowska, 2023). Research on the family dynamics of histrionic traits has also emphasized the role of relational learning and repeated patterns of emotional responsiveness (Sima-Comaniciu et al., 2023). Paradoxical exposure may disrupt these learned cycles by changing the consequences of emotional expression and reducing the urgency of obtaining external validation.

Although paradoxical exposure therapy reduced relational distress, its comparative effect on this outcome was weaker than that of the other treatments. One explanation is that paradoxical methods primarily target avoidance, symptom control, and fear of emotional experience rather than providing comprehensive instruction in communication and interpersonal problem-solving. Participants may have become more capable of tolerating relational uncertainty or reduced attention, yet they may still have lacked the assertiveness, validation, negotiation, and boundary-setting skills explicitly taught in dialectical behavior therapy. Relational distress is multidimensional and can include dependency, hostility, low sociability, limited openness, weak assertiveness, and difficulty considering others. A treatment focused largely on changing the individual's relationship with distress may not directly address all these interpersonal domains. Studies of communication difficulties suggest that improvements in relationship quality often require explicit work on emotional awareness, cognitive regulation, and social adjustment (Abdollahi Charmahini & A'Rab Shibani, 2024; Radi Famian, 2024). Therefore, paradoxical exposure may be more effective when relational problems are maintained primarily by avoidance and emotional overcontrol, but less effective when broad interpersonal-skills deficits are present.

The maintenance of treatment effects at follow-up is another important finding. In the cognitive behavioral therapy group, the significant pretest-to-posttest and pretest-to-follow-up changes, together with nonsignificant posttest-to-follow-up differences, suggested that gains in distress tolerance and relational distress were largely maintained. This stability may reflect the continued use of cognitive restructuring, thought monitoring, and interpersonal behavioral experiments after the intervention ended. In the dialectical behavior therapy group, improvements were also maintained, and the small additional change in relational distress between posttest and follow-up may indicate that interpersonal skills continued to consolidate through real-life practice. In the paradoxical exposure group, the continued change in distress tolerance between posttest and follow-up may suggest that repeated exposure to distressing situations strengthened tolerance over time, whereas relational improvements remained relatively stable. These maintenance patterns are compatible with the view that psychological skills become more effective when repeatedly applied in natural contexts. The finding also corresponds with evidence that mindfulness and distress tolerance are associated with more favorable mental-health functioning under stressful conditions (McDonald et al., 2022).

The results additionally support the conceptual association between distress tolerance and relational functioning. As participants became better able to withstand emotional discomfort, they may have become less likely to react impulsively to perceived rejection or interpersonal frustration. Improved tolerance can create a pause between emotional activation and behavioral response, allowing more thoughtful communication. This mechanism is particularly relevant in histrionic personality patterns, where rapidly shifting affect and sensitivity to interpersonal attention may produce recurrent relational instability. Research has linked histrionic symptoms to insecure attachment, maladaptive personality characteristics, and problematic romantic patterns (Borji et al., 2023). Cognitive characteristics associated with histrionic personality disorder have also been connected to temperament and adverse interpersonal experiences (Yalch et al., 2023). Therefore, improving distress tolerance may indirectly reduce relational distress by weakening the influence of emotional vulnerability on interpersonal behavior. At the same time, improved relationships may reduce the frequency of situations that trigger distress, creating a reciprocal cycle of psychological improvement.

Overall, the findings suggest that all three therapies can be considered effective, but they should not be viewed as interchangeable. Cognitive behavioral therapy appears useful for modifying maladaptive beliefs and reducing cognitive processes that intensify emotional and interpersonal problems. Paradoxical exposure therapy appears valuable for disrupting avoidance, symptom control, and fear of distress. Dialectical behavior therapy appears especially effective when low distress tolerance and interpersonal dysregulation occur together because it directly targets both through mindfulness, acceptance, emotion regulation, crisis-survival strategies, and

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interpersonal-effectiveness training. The superiority of dialectical behavior therapy in the present study is therefore theoretically coherent and clinically meaningful. Nevertheless, the effectiveness of all three approaches reinforces the broader conclusion that histrionic personality traits are responsive to structured psychological intervention and that meaningful improvements can occur even within a relatively brief ten-session program.

The present study had several limitations. Participants were selected through convenience sampling from dental students attending hospital-based and university-related centers in Isfahan, which limits the generalizability of the findings to students in other academic disciplines, universities, geographical regions, or cultural settings. The sample size was relatively small, with only 15 participants in each group, and the sex and age distributions were not fully balanced across the four groups. The outcomes were assessed using self-report questionnaires and may therefore have been influenced by social desirability, response bias, limited insight, or participants' expectations regarding treatment. The follow-up period was limited to 45 days and did not establish whether the observed effects would remain stable over longer periods. The study also focused on students with histrionic personality traits rather than individuals with a confirmed diagnosis of histrionic personality disorder, and no active placebo or alternative-attention control condition was included. Therapist effects, treatment adherence, homework completion, and intervention fidelity were not examined as independent contributors to treatment outcome.

Future studies should recruit larger and more diverse samples through probability-based or multicenter sampling and should include students from different academic disciplines and regions. Longer follow-up periods of six months or one year would provide stronger evidence regarding the durability of treatment effects. Future investigations could combine self-report measures with clinician ratings, behavioral observations, peer reports, or objective indicators of academic and interpersonal functioning. Researchers should also examine potential mediators such as emotion regulation, experiential avoidance, mindfulness, cognitive distortions, attachment insecurity, and interpersonal effectiveness to determine how each intervention produces change. Comparative studies could evaluate combined or sequential treatments, such as cognitive behavioral therapy followed by dialectical skills training or paradoxical exposure integrated with interpersonal-effectiveness training. It would also be useful to examine whether baseline severity, sex, age, comorbid symptoms, or specific histrionic traits moderate treatment response.

In practice, university counseling centers and dental schools should consider screening students for persistent emotion-regulation difficulties, low distress tolerance, and interpersonal problems, particularly when these difficulties interfere with clinical training or academic adjustment. Brief group-based interventions can be incorporated into student mental-health services, with dialectical behavior therapy prioritized when emotional reactivity and relational instability are both prominent. Cognitive behavioral therapy may be particularly appropriate for students whose difficulties are maintained by rigid beliefs, rumination, and catastrophic interpretations, whereas paradoxical exposure may be useful for those who rely strongly on avoidance, reassurance seeking, or excessive attempts to control emotional experiences. Practitioners should adapt intervention examples to the realities of dental education, including performance evaluation, patient communication, clinical errors, faculty feedback, and peer competition. Ongoing supervision, treatment-fidelity monitoring, and booster sessions may further strengthen maintenance and transfer of therapeutic gains.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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