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A Comparison of the Effectiveness of the Combined Cognitive–Emotional Reconstruction Package for Infertile Women and Unified Transdiagnostic Couple Therapy on Emotion Regulation and Affective Capital

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ABSTRACT

Infertility is one of the most stressful and distressing experiences in marital life and can profoundly influence the emotional conditions and relationship quality of couples. The purpose of the present study was to compare the effectiveness of the combined cognitive–emotional reconstruction couple intervention with unified transdiagnostic couple therapy on emotion regulation and affective capital in infertile women. The study employed a quasi-experimental design with pretest–posttest and a two-month follow-up, including a control group. The statistical population consisted of infertile women who sought services at infertility centers in Isfahan during the winter of 2024. From this population, 60 individuals were selected through purposive sampling and randomly assigned to three groups of 20 participants each. The combined cognitive–emotional reconstruction couple treatment and unified transdiagnostic couple therapy were administered over ten 60-minute sessions. The research instruments included the Cognitive Emotion Regulation Questionnaire (Gross & John, 2003) and the Affective Capital Scale (Golparvar, 2018). Data were analyzed using repeated-measures ANOVA and Bonferroni post hoc tests in SPSS version 26. The results indicated that both therapeutic approaches, when compared with the control group, significantly improved emotion regulation and increased affective capital ($p < .01$). In comparing the two therapeutic methods, cognitive–emotional reconstruction showed significantly greater effectiveness than unified transdiagnostic couple therapy in the reappraisal component of emotion regulation and in affective capital; however, in the emotional suppression component of emotion regulation, both approaches demonstrated similar levels of effectiveness. Overall, based on the obtained findings, it is recommended that both the combined cognitive–emotional reconstruction couple intervention and unified transdiagnostic couple therapy be utilized in counseling and psychotherapy centers to enhance affective capital and emotion regulation among infertile women and their spouses.

Keywords: combined cognitive–emotional reconstruction couple intervention, unified transdiagnostic couple therapy, emotion regulation, affective capital, infertile women.

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Introduction

Infertility is widely recognized as one of the most emotionally disruptive and psychologically taxing life events for couples, generating chronic distress, relational strain, and persistent psychological vulnerability.

Epidemiological evidence indicates that infertility has been increasing both globally and regionally, with contemporary projections suggesting that prevalence will continue rising through 2040 as a result of demographic transitions, lifestyle changes, and shifting reproductive patterns (1). In the Iranian context, recent national surveys similarly highlight a substantial burden of infertility, with 2019 prevalence estimates confirming that infertility constitutes a major public health concern requiring systematic psychosocial intervention efforts (2). The emotional consequences of infertility are particularly profound for women, who often bear the heavier psychological responsibility for reproductive outcomes due to sociocultural expectations, gender norms, and structural inequities, increasing their risk for anxiety, depression, and emotion dysregulation (3). These emotional consequences become magnified in clinical contexts such as in vitro fertilization (IVF), where hope, fear of failure, and psychological strain intersect in complex ways, often reducing fertility-related quality of life and worsening negative affect (4).

The emotional complexity of infertility has motivated a growing body of research examining the psychological, relational, and sociocultural factors linked to the experience of infertility, the outcomes of assisted reproductive technologies, and the broader functioning of infertile couples (5). For example, sociocultural pressures in remarried families and traditional communities can intensify psychological stress, thereby indirectly influencing treatment outcomes (6). Likewise, cultural expectations regarding fertility, lineage continuity, and marital stability frequently heighten emotional burden among infertile couples, suggesting the need for psychosocial-cultural perspectives in intervention planning (7). In this landscape, emotional well-being has emerged as a crucial dimension of reproductive health, with recent frameworks emphasizing the integration of emotional care as one of the foundational pillars of comprehensive IVF and infertility treatment programs (6).

Among the factors that shape emotional health in infertile women, emotion regulation plays a central role. Emotion regulation refers to the processes through which individuals monitor, evaluate, and modify their emotional reactions (8). Foundational models differentiate between cognitive reappraisal and expressive suppression, two regulatory strategies with distinct psychological and relational consequences (9). Dysfunctional emotion regulation has been repeatedly identified as a major predictor of infertility-related distress, maladaptive coping patterns, and interpersonal problems (10). Research among infertile women suggests that difficulties in emotion regulation mediate the link between infertility stress and broader indicators of psychological adjustment (11). With respect to intervention development, emotion regulation is therefore a vital target, as improvements in regulatory functioning are associated with improved coping capacity, reduced psychological distress, and enhanced relationship quality.

A related construct, emotional (affective) capital, has also gained scholarly attention in reproductive and clinical psychology. Emotional capital refers to the stock of positive emotional resources—such as energy, joy, vitality, and positive affect—that individuals possess and can draw upon in challenging contexts (12). Emotional capital is increasingly viewed as a protective factor that supports resilience, interpersonal functioning, and psychological stability. Empirical models show that emotional capital helps buffer psychosomatic symptoms and enhances relational functioning in emotionally stressful environments (13). Emerging evidence further suggests that enhancing emotional capital can be particularly beneficial for individuals undergoing medical procedures, chronic illness, or high-stress conditions such as infertility or hemodialysis (14, 15). Additional research demonstrates that emotion-focused and self-regulatory

interventions can significantly improve emotional capital in adolescents and clinical populations, supporting the argument for its central role in therapeutic outcomes (16).

Given the emotional complexity of infertility, numerous psychological interventions have been developed to reduce distress and strengthen emotional resilience. A systematic review of counseling approaches for infertile couples shows that a wide range of therapeutic modalities—including cognitive, mindfulness-based, behavioral, and integrative interventions—can improve marital intimacy and emotional functioning (17). Similarly, meta-analytic findings indicate that cognitive interventions are effective in enhancing the quality of life among infertile women, highlighting the value of cognitive restructuring and psychoeducational strategies (18). Psychological interventions have also been shown to significantly reduce negative affect and improve psychological well-being in infertile women when delivered as structured, evidence-based programs (19).

Among these interventions, cognitive reconstruction approaches have shown notable promise. Such interventions aim to modify maladaptive cognitions, strengthen adaptive thinking patterns, enhance emotional awareness, and develop more flexible coping strategies. Studies demonstrate that cognitive restructuring combined with emotional reframing improves psychological outcomes in women with repeated IVF failure, suggesting that addressing both cognitive and emotional processes may be more effective than purely cognitive or behavioral techniques alone (20). Research also underscores the importance of cognitive-emotional models in infertility, as maladaptive thoughts may exacerbate emotional vulnerability and intensify infertility-related stress (11).

Parallel to cognitive–emotional interventions, transdiagnostic treatments have become increasingly important in addressing the emotional complexities of infertility. The Unified Protocol (UP), developed by Barlow and colleagues, is a modular cognitive-behavioral intervention designed to target emotion dysregulation underlying a broad spectrum of emotional disorders (21). Recent editions of the Unified Protocol highlight its flexibility, applicability across diagnostic boundaries, and suitability for comorbid conditions frequently seen in infertility, such as anxiety, depression, and stress-related symptoms (22). A growing body of research supports the efficacy of the Unified Protocol in infertile women, showing that it improves emotion regulation, reduces uncertainty intolerance, and enhances psychological functioning among women undergoing IVF (23). Additional evidence suggests that UP-based interventions can effectively reduce anxiety and depression in infertile women receiving IVF treatment, supporting its adaptability across reproductive care contexts (24). Studies involving online delivery further demonstrate the protocol's feasibility and effectiveness in pregnant women and other reproductive populations (25).

Beyond the Unified Protocol, transdiagnostic emotion-focused therapies have been developed to address relational and emotional difficulties at the couple level. Emotion-focused transdiagnostic models for couples propose that relational patterns and emotional vulnerability are mutually reinforcing, making couple-based interventions valuable for improving emotional functioning (26). Couple-based interventions have been shown to reduce distress, enhance communication patterns, and promote emotional bonding, especially when relational issues are intertwined with emotional disorders. For infertile couples, targeting both emotional regulation and relational functioning may be especially important given the significant interpersonal strain caused by infertility.

Furthermore, infertility often requires couples to navigate complex medical and emotional decisions, highlighting the importance of psychosocial and cultural sensitivity in treatment models. Integrative reviews emphasize that infertility care must account for cultural norms, gendered expectations, and relational dynamics to ensure effective intervention outcomes (7). Such considerations also underscore the need for interventions that can flexibly address emotional, relational, and cognitive components simultaneously, especially for infertile women who may face heightened societal and familial pressure (27).

Recent Iranian studies support the integration of emotion regulation training, mindfulness-based strategies, and parent-adolescent interaction interventions to strengthen emotional capital and reduce psychological vulnerability, suggesting cross-contextual relevance for infertility interventions (16, 28). The importance of lifestyle factors, stress management, and adaptive coping in reproductive health has also been documented internationally, emphasizing the interconnectedness of emotional and physiological well-being (29).

Despite empirical advances, limited studies have directly compared different therapeutic frameworks aimed at improving both emotion regulation and affective capital in infertile women. While cognitive–emotional reconstruction interventions and transdiagnostic treatments have separately shown substantial promise, their comparative effectiveness—particularly when delivered as couple-based treatments—remains underexplored. Furthermore, given the heightened emotional vulnerability associated with infertility, identifying the more effective therapeutic approach may provide a crucial basis for developing integrated, culturally sensitive, and evidence-based treatment protocols.

Thus, the aim of the present study is to compare the effectiveness of the combined cognitive–emotional reconstruction couple therapy and the unified transdiagnostic couple therapy on emotion regulation and affective capital in infertile women.

Methods and Materials

Study Design and Participants

The present study was a three-group quasi-experimental design consisting of a combined cognitive–emotional reconstruction couple therapy group, a unified transdiagnostic couple therapy group, and a control group, conducted across three stages: pretest, posttest, and a two-month follow-up. The statistical population included infertile women who sought services at infertility centers in Isfahan during the winter of 2024. From this population, 60 infertile women were selected purposively based on inclusion criteria and randomly assigned (simple randomization through lottery) to three groups of 20 participants each. Allocating 20 participants per group was based on the recommended minimum of 15 participants for each group in experimental studies (30).

Inclusion criteria consisted of: failure to achieve pregnancy after 12 months of regular sexual intercourse without the use of contraceptive methods; obtaining written informed consent from the infertile couples; willingness to participate in the study; acceptance of and commitment to the principles and rules of treatment; not receiving parallel psychological or psychiatric treatments; and absence of chronic psychological disorders such as bipolar disorder, schizophrenia, or similar conditions. Exclusion criteria included: the use of contraceptive methods; lack of cooperation or unwillingness to continue participation in training sessions; failure to complete assignments; and absence from two or more treatment sessions.

Ethical principles—including confidentiality, use of data solely for research purposes, complete freedom to continue participation, accurate disclosure of results upon participants' request, a nd offering training to the control group after treatment of the experimental groups—were fully observed.

The data collection procedure was as follows: after random assignment into the three groups —cognitive–emotional reconstruction couple therapy, unified transdiagnostic couple therapy for infertile women, and the control group—infertile women in all three groups completed the emotion regulation and affective capital questionnaires at the pretest stage. Subsequently, both intervention groups participated in their respective therapy programs in group format at a psychological counseling and treatment clinic. After the treatment sessions were completed, all three groups again completed the questionnaires at the posttest stage, and two months later at the follow-up stage. Both treatment programs consisted of ten 60-minute sessions held once a week and were administered by a therapist with at least 10 years of experience in psychotherapy and psychoeducation. The control group received no treatment until the experimental groups completed their interventions.

The combined cognitive–emotional reconstruction couple therapy package for infertile women was developed for the first time in the present study and was implemented after preliminary validation. The development process involved theory-driven deductive thematic network analysis (Attride-Stirling, 2001) conducted on literature related to infertility and relevant psychological treatments, resulting in the extraction of basic and organizing themes pertaining to cognitive reconstruction, emotional reconstruction, and infertility, specifically for women. Following the identification of detailed thematic domains, the treatment package was developed and its content validity confirmed by experts. Unified transdiagnostic couple therapy was administered based on the treatment protocol introduced by Barlow et al. (2011), which has previously been validated in studies such as Masjedi Arani et al. (2025), conducted among women undergoing assisted reproductive technology in Iran.

Data Collection

To measure emotion regulation strategies, the 10-item questionnaire by Gross and John (2003) was used, covering two subscales: suppression (items 2, 4, 6, 9) and reappraisal (items 1, 3, 5, 7, 8, 10). Responses are rated on a 7-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree). In the study by Gross and John (2003), in addition to extensive evidence supporting various validity indices, internal reliability coefficients were reported as .79 for reappraisal and .73 for suppression. This questionnaire has been validated in numerous international studies. For example, in Iran, Kianfar et al. (2023) examined its content, construct, and concurrent validity among students and reported a Cronbach's alpha of .689 for the total questionnaire (28).

Affective capital was measured using Golparvar's (2016) 20-item questionnaire, which assesses three dimensions: positive affective quasi-state, sense of energy, and happiness. Responses are rated on a 5-point Likert scale (1 = never, 2 = low, 3 = somewhat, 4 = high, 5 = always). This instrument has demonstrated strong validity and reliability. For example, Enayati and Golparvar (2018), using exploratory factor analysis with varimax rotation, reconfirmed its factor structure and reported a Cronbach's alpha of .965. They also provided evidence of convergent and divergent validity by showing significant correlations between affective capital scores and those from the collective affective investment q uestionnaire and psychosomatic complaint

measures (13). The questionnaire has been examined in numerous studies and consistently shown strong psychometric properties (15).

Interventions

The cognitive–emotional reconstruction couple therapy consisted of ten structured sessions designed to enhance emotional awareness, cognitive flexibility, and relational functioning in infertile women. The first session focused on introductions, clarification of treatment goals, establishing rapport, presenting the overall structure of the program, and providing psychoeducation on cognitive and emotional reconstruction, followed by group discussion on the necessity of such reconstruction and training in managing distressing emotions with corresponding homework. The second session centered on teaching strategies for controlling and managing ambiguous emotional states, accompanied by homework practice. The third session addressed the management and replacement of maladaptive emotional and affective coping responses, with related assignments. The fourth session trained participants in identifying, managing, and modifying negative attentional beliefs, supported by practical exercises. The fifth session concentrated on recognizing cognitive distortions and practicing techniques for correcting them. In the sixth session, participants learned to control and manage dysfunctional automatic thoughts and completed associated home assignments. The seventh session advanced cognitive and behavioral coping by teaching methods for replacing ineffective coping strategies, again supplemented with homework. Session eight focused on managing mental and cognitive distress through structured exercises. In the ninth session, participants were trained in cultivating self-compassion, forgiveness toward themselves and others, and were given related practices. The tenth and final session concentrated on repairing and strengthening damaged emotional bonds, reviewing all skills taught throughout the program, assigning tasks to support emotional relationship repair, and arranging the follow-up assessment two months later.

The unified transdiagnostic therapy protocol, adapted from Barlow and colleagues and previously applied in Iranian infertility research, was delivered in ten sessions aimed at enhancing emotional awareness, modifying maladaptive emotional patterns, and strengthening adaptive responses to emotional cues. In the first session, participants were guided to increase motivation for change by evaluating the advantages and disadvantages of modifying their emotional habits compared with maintaining their previous patterns. The second session provided psychoeducation and emotional tracking, including instruction on the nature of emotions, the core components of emotional experiences, and the role of learned emotional responses. The third session taught emotional awareness, helping participants deepen their understanding of how they react to emotions and practice judgment-free, present-focused awareness of emotional experiences. In the fourth session, participants learned to evaluate and modify cognitive appraisals, identify their thought patterns, practice correcting maladaptive thinking, and increase flexibility in interpreting varying situations. The fifth session focused on identifying emotional avoidance patterns and emotion-driven behaviors, teaching strategies to recognize avoidance tendencies and modify maladaptive emotional action tendencies. The sixth session expanded this work by examining emotion-based behaviors more deeply, helping participants understand how these behaviors influence emotional experiences, and encouraging them to adopt alternative action tendencies through emotional exposure. The seventh session enhanced awareness and tolerance of bodily sensations by teaching participants how somatic cues influence thoughts, behaviors, and emotions,

and how to cope more adaptively with these sensations. Sessions eight and nine involved structured exposure to both internal and external emotional triggers, helping participants increase tolerance for emotional activation, reduce avoidance through graded exposure hierarchies, and create new contextual learning opportunities. The tenth session focused on relapse prevention, guiding participants to identify strategies to maintain therapeutic gains, anticipate potential challenges, consolidate their progress, complete the posttest, and coordinate the two-month follow-up session.

Data analysis

For statistical analysis, in addition to assessing statistical assumptions—including normality (Shapiro–Wilk test), equality of error variances (Levene's test), equality of variance–covariance matrices (Box's M test), and sphericity (Mauchly's test)—means and standard deviations were used, followed by repeated-measures ANOVA and Bonferroni post hoc tests. Data were analyzed using SPSS version 26. The acceptable significance level in the present study ranged from .05 to .001.

Findings and Results

The three study groups were compared in terms of age, educational level, years since marriage, and years of infertility using the chi-square test. The results of the demographic variables are presented in Table 1.

Table 1. Comparison of the Frequency Distribution of the Study Groups in Demographic Variables

Variable and Levels	Cognitive–Emotional Reconstruction Therapy n (%)	Unified Transdiagnostic Therapy n (%)	Control Group n (%)	Chi-square Test (Significance)
Education				2.34 (p > .05)
High school diploma or below	7 (35)	4 (20)	4 (25)	
Associate/Bachelor's degree	10 (50)	11 (55)	13 (70)	
Master's/Doctorate	3 (15)	5 (25)	3 (5)	
Age				1.81 (p > .05)
Up to 30 years	10 (50)	8 (40)	8 (40)	
31–35 years	8 (40)	11 (55)	9 (45)	
36 years and above	2 (10)	1 (5)	3 (15)	
Years of Marriage				.14 (p > .05)
Up to 5 years	12 (60)	11 (55)	11 (55)	
6 years and above	8 (40)	9 (45)	9 (45)	
Years of Infertility				.80 (p > .05)
Up to 3 years	9 (45)	10 (50)	11 (55)	
4–5 years	6 (30)	5 (25)	4 (20)	
6 years and above	5 (25)	5 (25)	5 (25)	

As shown in Table 1, no significant differences were found among the three study groups in any demographic variables.

Table 2. Means and Standard Deviations of Emotion Regulation (Reappraisal and Suppression) and Affective Capital Across Three Time Points

Variable	Time	Cognitive–Emotional Reconstruction (Mean)	SD	Unified Transdiagnostic Therapy (Mean)	SD	Control (Mean)	SD
Emotion Regulation – Reappraisal	Pretest	16.65	3.33	18.50	3.46	18.70	2.77
	Posttest	33.70	3.11	29.80	2.74	19.20	3.09
	Follow-up	34.25	3.04	29.60	2.82	19.65	3.22
Emotion Regulation – Suppression	Pretest	18.85	2.18	18.60	2.01	18.70	2.60
	Posttest	9.05	2.06	10.80	2.86	19.10	2.73
	Follow-up	9.06	1.99	11.05	2.60	18.90	2.38
Affective Capital	Pretest	39.55	8.18	40.85	9.36	38.15	8.51
	Posttest	77.00	7.70	63.45	7.72	40.50	8.65
	Follow-up	77.05	7.44	65.05	7.27	39.95	7.15

As shown in Table 2, the mean scores of emotion regulation (reappraisal and suppression) and affective capital indicate that both the cognitive–emotional reconstruction therapy group and the unified transdiagnostic couple therapy group demonstrated greater improvements than the control group in the posttest and follow-up stages.

Before conducting repeated-measures ANOVA, results of the Shapiro–Wilk test for emotion regulation and affective capital indicated normal distribution ($p > .05$). Levene's test confirmed equality of variances among the study groups for both variables ($p > .05$). Box's M test showed equality of the variance–covariance matrix ($p > .05$). Mauchly's test indicated that the assumption of sphericity was violated for both emotion regulation and affective capital. Accordingly, Greenhouse–Geisser corrected values were used for the time factor and the time × group interaction. Table 5 presents the results of repeated-measures ANOVA for emotion regulation and affective capital.

Table 3. Results of Repeated-Measures ANOVA for Emotion Regulation and Affective Capital

Source of Effect	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared	Power
Emotion Regulation – Reappraisal							
Within-Subjects							
Time	3804.63	1.32	2873.84	289.31	.001	.83	1
Time × Group	1882.43	2.65	710.95	71.57	.001	.71	1
Error (Time)	749.60	75.46	9.93	–	–	–	–
Between-Subjects							
Group	2646.03	2	1323.02	87.10	.001	.75	1
Error	865.85	57	15.19	–	–	–	–
Emotion Regulation – Suppression							
Within-Subjects							
Time	1311.03	1.28	1026.22	224.30	.001	.80	1
Time × Group	757.13	2.55	296.32	64.77	.001	.69	1
Error (Time)	333.17	72.82	4.57	–	–	–	–
Between-Subjects							
Group	1480.83	2	740.42	64.73	.001	.69	1
Error	652.03	57	11.44	–	–	–	–
Affective Capital							
Within-Subjects							
Time	17616.04	1.19	14796.89	259.23	.001	.82	1
Time × Group	8495.82	2.38	3568.10	62.51	.001	.69	1
Error (Time)	3803.47	67.86	57.08	–	–	–	–

Between-Subjects							
Group	19530.28	2	9765.14	77.83	.001	.73	1
Error	7151.38	57	125.46	–	–	–	–

Based on the results of Table 3, for the variable *reappraisal* in the within-subjects section, the main effect of time ($F = 289.31$, $df = 1.32$, $p < .01$) and the time × group interaction ($F = 71.57$, $df = 2.65$, $p < .01$) indicate that both across time and in the interaction of time with group (the three study groups), significant differences exist ($p < .01$). The eta-squared value for the time factor was .83 with power of 1, and for the time × group interaction was .71 with power of 1. This indicates that 83% and 71% of the variance in reappraisal, respectively, are attributed to the independent variable (either cognitive–emotional reconstruction therapy or unified transdiagnostic therapy), confirmed with 100% power. In the between-subjects section, a significant group effect was also found for reappraisal ($p < .01$). The eta-squared value was .75 with power of 1, indicating that with full statistical power, 75% of the variance in reappraisal is explained by differences among at least one of the treatment groups versus the control group.

As shown in Table 3 for the variable *suppression*, in the within-subjects section, the main effect of time ($F = 224.30$, $df = 1.28$, $p < .01$) and the time × group interaction ($F = 64.77$, $df = 2.55$, $p < .01$) were significant. The eta-squared value for time was .80 (power = 1), and for the time × group interaction was .69 (power = 1). This indicates that 80% and 69% of the variance in suppression, respectively, are attributed to the independent variable, confirmed with full statistical power. In the between-subjects section, a significant group effect was also found ($p < .01$). The eta-squared value was .69 with power of 1, indicating that 69% of the variance in suppression differences across groups is due to the intervention effects.

As shown in Table 3 for *affective capital*, in the within-subjects section, the main effect of time ($F = 259.23$, $df = 1.19$, $p < .01$) and the time × group interaction ($F = 62.51$, $df = 2.38$, $p < .01$) were significant. The eta-squared value for time was .82 (power = 1), and for the interaction was .69 (power = 1). This indicates that 82% and 69% of the variance in affective capital, respectively, can be attributed to the independent variable (either cognitive–emotional reconstruction therapy or unified transdiagnostic therapy), confirmed with 100% power. In the between-subjects section, the group effect was significant ($p < .01$). The eta-squared value was .73 with power of 1, indicating that with full power, 73% of the variance in affective capital differences across groups is attributable to the interventions.

Table 4. Results of the Bonferroni Test for Emotion Regulation and Affective Capital

Variable	Row	Reference Group	Comparison Group	Mean Difference	Standard Error	Significance
Emotion Regulation – Reappraisal						
Time	1	Pretest	Posttest	−9.62	0.51	.001
	2		Follow-up	−9.88	0.57	.001
	3	Posttest	Follow-up	0.27	0.26	.92
Group	4	Cognitive–Emotional Reconstruction	Unified Transdiagnostic Therapy	2.23	0.71	.008
	5		Control	9.02	0.71	.001
	6	Unified Transdiagnostic Therapy	Control	6.78	0.71	.001
Emotion Regulation – Suppression						
Time	1	Pretest	Posttest	5.73	0.36	.001
	2		Follow-up	5.72	0.37	.001
	3	Posttest	Follow-up	−0.02	0.16	1

Group	4	Cognitive–Emotional Reconstruction	Unified Transdiagnostic Therapy	−1.17	0.62	.19
	5		Control	−6.58	0.62	.001
	6	Unified Transdiagnostic Therapy	Control	−5.42	0.62	.001
Affective Capital						
Time	1	Pretest	Posttest	−20.80	1.27	.001
	2		Follow-up	−21.17	1.27	.001
	3	Posttest	Follow-up	−0.37	1.27	1
Group	4	Cognitive–Emotional Reconstruction	Unified Transdiagnostic Therapy	8.08	2.04	.001
	5		Control	25.00	2.04	.001
	6	Unified Transdiagnostic Therapy	Control	—	—	.001

Based on the results of Table 4, in the variable of emotion regulation (reappraisal and suppression dimensions), significant differences were observed between the pretest and posttest, and between the pretest and follow-up; however, no significant difference was found between the posttest and the follow-up. This indicates that from pretest to posttest and follow-up, reappraisal increased and emotional suppression decreased, while these changes remained stable between posttest and follow-up, with no significant variation occurring. At the between-group level, in the reappraisal dimension, significant differences ($p < .01$) were found both between the two treatment groups (cognitive–emotional reconstruction and unified transdiagnostic couple therapy) and the control group, as well as between the two treatment groups themselves ($p < .01$). In the suppression dimension, both treatment groups showed significant differences compared to the control group ($p < .01$), but no significant difference was observed between the two treatment groups ($p > .01$).

In the variable of affective capital, there were significant differences between the pretest and posttest, and between the pretest and follow-up, while no difference was observed between posttest and follow-up. This means that affective capital significantly increased from pretest to posttest and follow-up, and this increase was maintained during follow-up. Additionally, at the group level, significant differences ($p < .01$) were found between both treatment groups and the control group, as well as between the cognitive–emotional reconstruction group and the unified transdiagnostic couple therapy group ($p < .01$).

Overall, in the reappraisal component of emotion regulation and the variable of affective capital, the effectiveness of cognitive–emotional reconstruction therapy was significantly greater than that of unified transdiagnostic couple therapy, whereas in the emotional suppression component, both therapeutic approaches demonstrated equal effectiveness.

Discussion and Conclusion

The present study examined and compared the effectiveness of the combined cognitive–emotional reconstruction couple therapy and the unified transdiagnostic couple therapy on emotion regulation and affective capital in infertile women. The results demonstrated that both therapeutic approaches significantly improved reappraisal, reduced emotional suppression, and enhanced affective capital from pretest to posttest and follow-up, although the cognitive–emotional reconstruction intervention showed superior outcomes in reappraisal and affective capital. These findings underscore the central role of emotional and

cognitive processes in shaping the psychological experience of infertility, as well as the value of targeted therapeutic interventions capable of addressing the complex emotional demands faced by infertile women.

The improvement in emotion regulation across both treatment groups aligns with core theoretical models describing emotion regulation as a multi-component system that can be strengthened through structured psychological interventions. Reappraisal is considered a high-adaptive cognitive strategy that supports psychological flexibility and reduces emotional vulnerability (8). Cognitive–emotional reconstruction was specifically designed to enhance meaning-making, reframing, and cognitive restructuring, which plausibly explains its stronger effect on reappraisal. This is consistent with prior cognitive intervention research demonstrating that restructuring maladaptive cognitions leads to a more adaptive reinterpretation of distressing situations (18). In infertility contexts, adaptive reappraisal is particularly important because cognitive distortions related to personal inadequacy, hopelessness, and perceived loss are prevalent among women undergoing treatment (11). The enhanced effectiveness of cognitive–emotional reconstruction observed in this study mirrors the findings of recent clinical work showing that cognitive reconstruction and positive-thinking interventions significantly reduce stress and improve psychological functioning in women with recurrent IVF failure (20).

Both interventions also led to a significant decrease in emotional suppression, which is considered a maladaptive emotion regulation strategy associated with increased physiological stress and impaired relational functioning (10). The reductions observed in the current study can be attributed in part to the transdiagnostic focus of the Unified Protocol, which explicitly targets emotional avoidance, suppression, and maladaptive regulation patterns (21). The UP includes components such as present-focused emotional awareness, cognitive flexibility, and exposure to avoided affective states, all of which have been shown to reduce suppressive tendencies (22). This aligns with prior research demonstrating the UP's effectiveness in improving emotion regulation and decreasing experiential avoidance among infertile women receiving IVF treatment (23) as well as reducing anxiety and depressive symptoms in reproductive health contexts (24).

Although both treatments were effective, the superiority of cognitive–emotional reconstruction in reappraisal may be attributable to its deeper emphasis on emotion–cognition integration. As previous models of emotion regulation show, cognitive processes play a fundamental role in shaping the trajectory of emotional responses (10). Because infertility involves chronic uncertainty, internalized stigma, and interpretive biases, interventions that directly restructure cognitive schemas may generate larger and more sustained changes in cognitive regulatory strategies. This aligns with evidence showing that infertility-related distress is strongly mediated by maladaptive cognitive processes, and therapeutic change depends heavily on modifying negative fertility-related interpretations (11).

The pattern of results for affective capital is similarly consistent with prior theoretical and empirical work. Emotional capital encompasses positive emotional resources such as vitality, joy, and energy (12), and increases in these resources are associated with improved functioning, resilience, and well-being. The significant improvements in affective capital across both treatment groups reflect the capacity of structured psychological interventions to enhance positive emotional resources, particularly in populations facing chronic stress. This aligns with previous studies showing that emotion regulation training and culturally adapted psychoeducational programs increase affective capital in clinical and adolescent populations (16). The superior improvement in affective capital within the cognitive–emotional reconstruction group can

again be explained by the centrality of cognitive reframing and emotional integration in this approach, consistent with evidence showing that cognitive restructuring strongly enhances positive emotional resources (4).

In addition, the relational context of infertility highlights the relevance of couple-based interventions. Transdiagnostic emotion-focused therapy for couples, for example, emphasizes that emotional distress in one partner deeply influences relational processes and that couple-based emotional interventions can produce synergistic effects (26). Infertility is well established as a relational stressor that affects marital intimacy, communication, and dyadic adjustment, making couple-level treatments especially appropriate. Systematic reviews show that counseling approaches that target dyadic emotional functioning are effective in improving relational health among infertile couples (17). The results of the current study support this broader evidence base by demonstrating that couple-based interventions are capable of strengthening both individual emotional functioning (through reappraisal and suppression reduction) and shared relational resources (operationalized through affective capital).

The results further align with contemporary psychosocial-cultural frameworks emphasizing the need for holistic emotional care in infertility treatment. Scholars have argued that emotional well-being constitutes a foundational pillar of IVF and infertility care, highlighting the need for interventions that recognize the emotional, cultural, and relational complexity of reproductive distress (6). The significant improvements observed in both emotional regulation and affective capital in the present study lend empirical support to such integrative perspectives. Similarly, international research stresses that psychological distress, emotional vulnerability, and negative affect among infertile women are critical predictors of treatment outcomes and quality of life, reinforcing the importance of emotional interventions (3, 19).

Furthermore, global analyses indicate that the increasing prevalence of infertility will require scalable, culturally sensitive, and psychologically informed models of care (1). Clinical reviews also suggest that incorporating psychosocial and cultural considerations is crucial for addressing the emotional burden of infertility (7). The success of both interventions in this study supports the need for treatment models capable of addressing emotional complexity in culturally diverse populations, including Iranian women, who often face heightened societal expectations surrounding fertility.

Finally, previous empirical findings support the feasibility and effectiveness of transdiagnostic approaches in infertility care, as such interventions accommodate comorbidity and shared emotional vulnerabilities across various diagnostic categories (22). Likewise, cognitive–emotional interventions have been shown to be effective in decreasing stress, improving coping, and enhancing emotional well-being among infertile populations (20). The convergence between the present study's findings and prior research adds to the growing base of evidence supporting the integration of cognitive, emotional, and transdiagnostic principles in infertility therapy.

Together, these findings underscore the importance of interventions that target both cognitive and emotional processes for infertile women. They highlight the dynamic interplay between emotion regulation and affective capital and demonstrate the potential therapeutic advantage of interventions that incorporate cognitive-emotional integration alongside transdiagnostic principles.

The study used a purposive sampling method limited to infertile women in one metropolitan region, which may restrict the generalizability of the findings. The sample size, although adequate for experimental design

standards, may limit the detection of subtle differences between treatment approaches. The follow-up period was relatively short, preventing conclusions regarding long-term maintenance of improvements. Self-report instruments were used to assess outcomes, and these may be affected by social desirability or response bias. Finally, the absence of physiological or observational measures limits inferences regarding the broader biopsychological processes underlying treatment effects.

Future studies should employ larger and more diverse samples to improve generalizability and explore cultural moderators of intervention effectiveness. Longitudinal designs with extended follow-up periods would help determine the durability of treatment gains. Future research could also compare additional therapeutic modalities, including integrated or hybrid interventions, and evaluate couple-level outcomes beyond individual emotional functioning. Incorporating qualitative methods may provide deeper insight into how women experience infertility-related emotional shifts. The use of physiological and neurocognitive measures could further enrich understanding of mechanisms underlying therapeutic change.

Practitioners working with infertile women should integrate emotional and cognitive components into treatment plans, emphasizing strategies that enhance reappraisal and reduce emotional suppression. Couple-based interventions may be especially valuable given the relational nature of infertility stress. Clinics offering infertility care should incorporate structured psychological services that promote emotional capital and resilience. Tailoring interventions to cultural and relational contexts can further enhance effectiveness.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

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

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