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Comparison the Effectiveness of Dialectical Behavior Therapy and Transactional Behavior Analysis on the Cognitive Emotion Regulation of Students with Social Anxiety

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Purpose: Students with social anxiety have many problems in the cognitive emotion regulation. As a result, the aim of this study was to comparison the effectiveness of dialectical behavior therapy and transactional behavior analysis on the cognitive emotion regulation of students with social anxiety.

Methodology: This research was a semi-experimental with a pre-test, post-test and one-month follow-up design with a control group. The research population was female senior high school with social anxiety in governmental schools of Ashkhane city in the academic years of 2022-2023. In this study, 45 people were selected by purposive sampling method and randomly replaced in three equal groups. Each of the experimental groups was trained in 10 sessions of 90 minute separately and as a group with dialectical behavior therapy and transactional behavior analysis methods, and the control group remained on the waiting list for training. The research tool was Connor et al social anxiety inventory (2000) and Garnefski and Kraaij cognitive emotion regulation questionnaire (1996), and the data obtained from their implementation were analyzed by methods of analysis variance with repeated measure and Bonferroni post hoc test in SPSS version 25 software.

Findings: The findings showed that there was a significant difference between the groups in terms of improving cognitive emotion regulation of students with social anxiety, and both methods of dialectical behavior therapy and transactional behavior analysis in compared to the control group significantly improved their cognitive emotion regulation in the post-test and follow-up stages ($P<0.05$).). Also, there was no significant difference between the both methods of dialectical behavior therapy and transactional behavior analysis in improve of cognitive emotion regulation of students with social anxiety ($P>0.05$).

Conclusion: According to the results of this study, therapists, counselors, and psychologists can use dialectical behavior therapy and transactional behavior analysis along with other treatment methods to improve the cognitive emotion regulation of students.

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1. Introduction

Social anxiety is a debilitating disorder that affects a high percentage of the population, causing harm (Fredrick, Becker, Kofler, Jarrett, Burns & Luebbe, 2020). This anxiety exists on a continuum, with the absence of social anxiety at one end and pervasive social anxiety disorder and avoidant personality disorder at the other, with a reported prevalence rate of approximately 7 to 13% (Hashemi, Eyni & Shahjoee, 2022). Social anxiety is recognized by intense fear and stress in social situations, leading to disruptions in daily activities and a decrease in the quality of life. It is defined as the fear or anxiety about one or more social situations where the individual is exposed to the scrutiny and criticism of others (Vu, Pham, Nishijo, Yokawa, The, Takiguchi et al., 2023). Alternatively, social anxiety is described as intense, chronic, persistent, and debilitating worry stemming from being in a social situation and performing in such contexts (Kobezak & Gibb, 2020). It is the most common anxiety disorder, characterized by severe fear of humiliation and negative judgment by others in social situations and a tendency to avoid specific social situations where the individual has had a negative experience (Adams, Wrath, Le & Alaverdashvili, 2019). Social anxiety has numerous physical and psychological consequences, including sweating, increased heart rate, academic performance decline, depression, substance abuse, social relational failure, and immaturity in interpersonal interactions (Efe, Ozbey, Erdem & Hatipoglu, 2020).

One of the challenges for individuals with social anxiety is the decline in cognitive emotion regulation (Dryman & Heimberg, 2018). Emotion regulation is a broad conceptual construct that encompasses countless regulatory processes, including a wide range of physical, social, emotional, and behavioral processes, both conscious and unconscious cognitive processes (Motevalli, Salahshour & Bailey, 2023). Cognitive emotion regulation refers to strategies used to maintain, reduce, or enhance emotional experiences and represents ways individuals cope with stressful situations and adverse, challenging events (Brandl, Corbi, Bratec & Sorg, 2019). This construct includes a set of cognitive strategies people use to maintain, enhance, or dampen their emotions, helping them control and manage emotionally provocative information (Huh, Kim, Lee & Chae, 2017). Cognitive emotion regulation plays a significant role in managing or regulating emotions and maintaining control over them during or after encountering threatening, stressful, and stressful challenges (Spencer, Guzick, Cervin & Storch, 2023). Cognitive emotion regulation comprises different components, including acceptance, positive refocusing, refocusing on planning, positive reappraisal, de-emphasizing, self-blaming, rumination, catastrophizing, and blaming others. Self-blaming, rumination, catastrophizing, and blaming others are considered maladaptive cognitive emotion regulation styles, while acceptance, positive refocusing, refocusing on planning, positive reappraisal, and de-emphasizing are considered adaptive cognitive emotion regulation styles (Rey, Neto & Extremera, 2020).

One method to improve cognitive emotion regulation is dialectical behavior therapy (Abdollahian, Rezaei, Jalili Shishwan & Moheb, 2020). This therapeutic approach, as one of the third-wave psychotherapy methods, combines supportive, cognitive, and behavioral therapies based on the principles of change and acceptance (Gottlieb, Klinger & Sampaio, 2022). Designed and developed by Linehan (1993) to establish a balance between change and acceptance, dialectical behavior therapy aims to help individuals regulate their emotional responses to events (Fitzpatrick, Bailey & Rizvi, 2020). Thus, the four components of this therapy include emotion regulation and interpersonal effectiveness, constituting the principle of change, and mindfulness and distress tolerance, constituting the principle of acceptance (Foynes, Singh & Landes, 2023). Dialectical behavior therapy utilizes four major strategies: skill training, exposure therapy, cognitive therapy, and event management for change (Salamin, Kratzel, Gothuey & Guenot, 2021). This therapy was created to assist individuals with emotion regulation difficulties and the consequences thereof, grounded in behavioral theories and crisis intervention theories based on mindfulness education (DeCou, Comtois & Landes, 2019). With mindfulness skills, this therapeutic method helps reduce confusion about oneself, allowing individuals to experience their thoughts and emotions without judgment. This non-judgmental experience enables individuals to accept and more accurately examine their thoughts and feelings, implementing changes to balance their thoughts (Yang, Crous, Balli-Borrero, Scott, Trujillo, Choi & Robles-Ramamurthy, 2022).

Another method for improving cognitive emotion regulation is transactional analysis (Naziryy, Hosseini Ravarizadeh, Davoodi & Fath, 2023), developed by Berne (1961) within the framework of communication psychology theory, initially aimed at solving emotional and behavioral problems (Ciucur, 2013). Proponents of transactional analysis believe that a significant part of people's lives is spent in interpersonal exchange and interaction, and the process of reducing interpersonal turmoil is activated by engaging the Adult ego state, helping individuals better understand their interpersonal relationships and solve problems with the help of others (Li, Gao, Yang, Si & Liu, 2022). This therapeutic method emphasizes three ego states: the Parent, Adult, and Child, with the Child seeking mischief, playfulness, and the pleasures of childhood, the Adult leading to the expression of appropriate and desirable emotions and behaviors, and the Parent dealing with internalized parental values and beliefs (McLean, 2023). In transactional analysis, the qualified therapist uses transactional analysis methods to enhance adult awareness from a problem-solving perspective (Yi, Liang, Xie & Li, 2023). As one of the third-wave psychotherapy methods, transactional analysis is used for change based on appropriate methods grounded in the here-and-now, aiming to increase the client's cognitive and emotional awareness regarding the affected area (Cambra-Fierro, Gao & Melero-Polo, 2021). This method employs concepts like the ego state pattern, transactions, strokes, life script, psychological games, and autotelic behavior, aiming to increase awareness and the ability of individuals to make new, responsible decisions to change and improve the flow of daily life (Egorova, Clukhov & Shikov, 2022).

Although no research has been conducted comparing the effectiveness of dialectical behavior therapy and transactional analysis, studies have been done on the effectiveness of each on cognitive emotion regulation. For example, Rahmani Moghaddam, Bagherzadeh Golmakani, Touzandehjani & Nejat (2023) found that dialectical behavior therapy improved positive and negative cognitive emotion regulation strategies and rumination in physically-disabled individuals under welfare coverage. Esnaasharan, Yazdkhasti & Orayzi (2021) found that dialectical behavior therapy improved emotion regulation and distress tolerance in women undergoing addiction treatment, with these results maintained at a three-month follow-up. Abdollahian et al. (2020) found that dialectical behavior therapy increased positive cognitive emotion regulation strategies, including acceptance, positive refocusing, refocusing on planning, positive reappraisal, and de-emphasizing, and decreased negative cognitive emotion regulation strategies, including self-blaming, rumination, catastrophizing, and blaming others in students with social anxiety disorder. Fassbinder, Schweiger, Martius, Wilde & Arntz (2023) found that both schema therapy and dialectical behavior therapy played a significant role in improving emotion regulation. Additionally, Hosseini Ravarizadeh, Naziryy, Davoodi & Fath (2023) found that transactional analysis, apart from the positive refocusing cognitive emotion regulation strategy, significantly impacted all strategies, including self-blaming, rumination, catastrophizing, blaming others, acceptance, refocusing on planning, positive reappraisal, and de-emphasizing in incompatible couples. Naziryy et al. (2023) found that both cognitive-behavioral couple therapy and transactional analysis improved cognitive emotion regulation strategies in incompatible couples, with cognitive-behavioral couple therapy being more effective in improving cognitive emotion regulation strategies than transactional analysis. Dastmardi, Moghtader & Akbari (2022) found that both self-compassion and transactional analysis interventions improved cognitive emotion regulation in students experiencing emotional failure, with no significant difference between them in improving cognitive emotion regulation.

Adolescence is associated with ineffective emotion regulation strategies compared to childhood and adulthood (Jangezahi Shastan, Kord Tamini & Karbalaei Harofteh, 2021), and this study was conducted on adolescent female students. Cognitive emotion regulation strategies in students are influenced by conditions and problems of adolescence and schooling in high school (Navabi, Goodarzi, Roozbahani & Kordestani, 2019). Also, social anxiety is a chronic, pervasive, and debilitating disorder with a relatively high prevalence in adolescent girls, who have numerous problems in cognitive emotion regulation. Effective methods such as dialectical behavior therapy and transactional analysis, both derived from the third wave of psychotherapy, can be used to improve cognitive emotion regulation. Although research results indicate the effectiveness of both methods in improving cognitive emotion regulation, no study has been found on their effectiveness or

their effectiveness on cognitive emotion regulation in female students with social anxiety disorder. Therefore, this study can investigate the effectiveness of both dialectical behavior therapy and transactional analysis on cognitive emotion regulation in female students with social anxiety and compare the effectiveness of dialectical behavior therapy and transactional analysis on improving cognitive emotion regulation. Consequently, the purpose of this study was to compare the effectiveness of dialectical behavior therapy and transactional analysis on cognitive emotion regulation in students with social anxiety.

2. Methodology

This semi-experimental research utilized a pre-test, post-test, and one-month follow-up design with a control group. The research population consisted of high school girls with social anxiety from public schools in the city of Ashkhaneh during the 2023-2024 academic year. In this study, 45 individuals were selected through purposive sampling and randomly assigned to three equal groups. The purposive sampling criteria included being aged 14 to 18, consent to participate in the study, scoring 19 or higher on the Social Anxiety Scale, not using psychiatric medication such as anti-anxiety and antidepressants, not having received psychological services in the past year, no history of substance abuse, no physical disability, and no history of receiving dialectical behavior therapy or transactional analysis. Criteria for exiting the study included missing more than two sessions and withdrawal from participation. The research instruments included:

Social Anxiety Scale: The Social Anxiety Scale by Connor, Davidson, Churchill, Sherwood, Foa, and Weisler (2000) with 17 items was used to measure social anxiety. A five-point Likert scale ranging from "not at all" with a score of zero, "usually" with a score of two, "very much" with a score of three, and "extremely" with a score of four was used for responses. Thus, the minimum score on the Social Anxiety Scale is 17, and the maximum score is 68, with higher scores indicating greater social anxiety. The cut-off score for this instrument is 19. Connor et al. (2000) validated the convergent validity of the Social Anxiety Scale with the short form of the Social Phobia Scale by Connor et al. (1997) and reported its reliability using Cronbach's alpha and test-retest methods as .94 and .89, respectively. In Iran, Momeni and Radmehr (2020) confirmed the content validity of the tool by three psychology professors and calculated its reliability using Cronbach's alpha as .80. In the current study, the reliability of the Social Anxiety Scale was calculated using Cronbach's alpha as .91.

Cognitive Emotion Regulation Questionnaire: The Cognitive Emotion Regulation Questionnaire by Garnefski and Kraaij (2006) with 18 items and 9 components including self-blaming, rumination, catastrophizing, and other-blaming as maladaptive cognitive emotion regulation and acceptance, positive refocusing, refocusing on planning, positive reappraisal, and de-emphasizing as adaptive cognitive emotion regulation (each component with 2 items) was used. Responses were rated on a five-point Likert scale from "never" with a score of one, "sometimes" with a score of two, "usually" with a score of three, "often" with a score of four, and "always" with a score of five. Thus, the minimum score for each component is 2, and the maximum score is 10, with higher scores indicating a greater presence of that feature or component. Garnefski and Kraaij (2006) confirmed the convergent validity of the Cognitive Emotion Regulation Questionnaire with the long form of the Cognitive Emotion Regulation Questionnaire (36 items) and reported its component reliability using Cronbach's alpha ranging from .65 to .78. In Iran, Mohsenabadi and Fathi-Ashtiani (2021) confirmed the convergent and divergent validity of the components with the Depression, Anxiety, and Stress Scale and calculated their reliability using Cronbach's alpha ranging from .75 to .88 and test-retest reliability ranging from .70 to .84. In the current study, the reliability of the components of the Cognitive Emotion Regulation Questionnaire was calculated using Cronbach's alpha ranging from .71 to .86.

The research stages proceeded as follows: after coordinating with the Education Department of Ashkhaneh city and the counseling officer, they were asked to refer high school girls suspected of having social anxiety disorder to the researcher. The referred individuals were assessed with the Social Anxiety Scale, and those scoring 19 or higher, meeting the study entry criteria, and signing the informed consent form by the students

and their guardians were selected as samples. The importance and necessity of the research were explained to the samples, and they were assured of the observance of ethics in research. The sampling process continued until the number of samples reached 45, and then they were randomly divided into three equal groups of 15. Each experimental group received 10 sessions of 90 minutes each, separately and in groups, with methods of dialectical behavior therapy and transactional analysis, while the control group remained on the waiting list for training.

For the intervention with dialectical behavior therapy, a researcher-developed package based on the book "Dialectical Behavior Therapy Techniques for Anxiety Disorders" by Chapman, Gratz, and Tull (2011), translated by ArjmandiNasab (2017), was used. The goals and content were reported separately for each session in Table 1.

Table 1. Objectives and Content of Dialectical Behavior Therapy by Session

Session	Objective	Content
1	Introduction and familiarization with Dialectical Behavior Therapy approach	Initial introduction and familiarization. outlining the research goals. establishing a therapeutic contract. and an overview of Dialectical Behavior Therapy and its components
2	Familiarization with the general principles of Dialectical Behavior Therapy approach	Teaching the general principles of mindfulness skills. distress tolerance. emotional regulation. and interpersonal effectiveness; realistic acceptance and feedback reception
3	Chain analysis of thoughts. feelings. and behaviors	Examining the chain of thoughts. feelings. and behaviors in anxiety-provoking situations. reality testing. value assessment. and feedback reception
4	Teaching relaxation or self-soothing strategies	Teaching relaxation or self-soothing strategies. examining activities related to attention redirection. and feedback reception
5	Teaching the principles of emotional regulation skills	Teaching the principles of emotional regulation skills in Dialectical Behavior Therapy. practicing related to physical signs of emotion. and feedback reception
6	Examining thoughts and emotions and connecting them	Examining thoughts and emotions. connecting actions to emotions. and feedback reception
7	Teaching the principles of interpersonal skills	Teaching the principles of interpersonal skills in Dialectical Behavior Therapy. self-assessment practice (like difficulty in saying no. etc.). and feedback reception
8	Reviewing and identifying personal needs and goals	Reviewing and identifying personal needs and goals. practice related to fulfilling one's own needs in interpersonal interactions. and feedback reception
9	Teaching anxiety control and self-care skills to reduce it	Anxiety control using Dialectical Behavior Therapy skills. self-care skills to reduce vulnerability to anxiety. and feedback reception
10	Session recapitulation	Recapitulation and review of sessions. examining Dialectical Behavior Therapy skills for anxiety control. teaching how to generalize skills outside the therapy session. and feedback reception

Also, for the intervention with transactional analysis, a researcher-developed package based on the books of transactional analysis by Berne (2022), Stewart (2013), and Harris (1980) was used. The goals and content were reported separately for each session in Table 2.

Table 2. Objectives and Content of Transactional Analysis by Session

Session	Objective	Content

1	Introduction and familiarization with Transactional Analysis approach	Initial introduction and familiarization. outlining research goals. establishing a therapeutic contract. and an introduction to Transactional Analysis and familiarity with concepts of interpersonal relationships
2	Explanation and structural analysis of ego states	Discussion on ego states including Parent. Adult. Child. discussion on verbal and non-verbal cues (e.g.. facial expressions. body language) representing ego states. and providing exercises and activities to ensure learning of distinguishing ego states
3	Functional analysis of ego states	Review of homework related to ego states. discussion on functional analysis of ego states including Critical Parent. Nurturing Parent. Compliant Child. Rebellious Child. Free Child. and Adult. and teaching drawing of an egogram (a visual map for better and simpler understanding of functional analysis)
4	Analysis of rejection and contamination states	Review of homework related to functional analysis and drawing egograms. discussion on structural problems including rejection (where an ego state is not impermeable. resulting in predictable behavior) and contamination (where one ego state uses information from other ego states which could be incorrect)
5	The importance of communication and types of transactions	Review of homework related to structural problems. discussion on types of behavioral exchanges including complementary or direct communication and its benefits. crossed communication and its disadvantages. ulterior communication and examples. and discussion on limitations and issues of using these communications in behavioral exchanges
6	Familiarity with the concept of strokes and analysis and review of it	Review of student homework related to communications. discussion on types of strokes. drawing a strokes diagram. and teaching stroke economy
7	Life script and its analysis	Review of homework related to strokes. discussion on how life scripts are formed and the necessity of exiting undesirable scripts and making new decisions. review of life status and its emergence process and its effects on life. and review of genuine and destructive feelings
8	Review of promotional and inhibitory messages	Review of homework related to life script. discussion on types of promotional and inhibitory messages and the role and function of promotional and inhibitory messages in thinking. feeling. and behavior
9	Psychological games and time structuring	Review of homework related to promotional and inhibitory messages. discussion and familiarity with types of psychological games and time structuring. and the role and function of psychological games in life
10	Session recapitulation	Recapitulation and review of sessions. examining transactional analysis skills for anxiety control. teaching how to apply skills outside the therapy session. and feedback reception

In this study, the data were analyzed using repeated measures ANOVA and Bonferroni post-hoc tests in SPSS version 25.

3. Findings

The mean and standard deviation of the age for the dialectical behavior therapy group were 16.40 ± 1.18, for the transactional analysis group 16.53 ± 0.99, and for the control group 16.40 ± 0.91. The mean and standard deviation of cognitive emotion regulation for the groups at the evaluation stages were reported in Table 3.

Table 3. Mean and Standard Deviation of Cognitive Emotion Regulation Across Groups at Measurement Stages

Variable	Group	Pre-test	Post-test	Follow-up

		Mean	SD	Mean	SD	Mean	SD
Acceptance	DBT	3.07	1.03	6.80	1.42	6.80	1.47
	TA	3.13	2.10	6.67	1.63	6.13	1.55
	Control	4.13	2.00	4.13	2.00	4.20	1.93
Positive Refocusing	DBT	3.07	0.70	6.73	1.71	6.47	1.64
	TA	3.27	1.71	6.40	1.59	6.27	1.67
	Control	3.93	1.62	4.27	1.98	4.47	2.10
Refocusing on Planning	DBT	3.20	1.26	6.20	1.52	6.73	1.62
	TA	3.07	1.28	6.40	1.35	7.00	1.85
	Control	3.80	1.32	4.20	1.66	4.33	1.72
Positive Reappraisal	DBT	3.87	1.41	6.87	1.60	6.53	1.60
	TA	3.07	1.28	6.40	1.40	5.93	1.79
	Control	3.67	1.35	3.93	1.62	4.13	1.73
De-emphasizing	DBT	4.67	1.40	6.80	1.78	6.40	1.55
	TA	3.53	1.64	6.80	1.86	6.47	1.81
	Control	3.47	1.73	3.93	1.39	4.00	1.41
Self-Blaming	DBT	7.67	1.45	4.00	1.69	5.20	1.97
	TA	8.20	1.32	4.53	1.92	4.60	1.76
	Control	7.53	1.13	8.07	1.44	8.13	1.36
Rumination	DBT	8.67	1.35	4.60	1.92	5.47	1.77
	TA	8.93	1.28	4.73	1.44	4.53	1.60
	Control	8.13	1.77	8.27	2.25	8.27	2.22
Catastrophizing	DBT	8.67	1.35	4.20	2.04	4.60	1.88
	TA	8.20	1.26	4.73	1.22	4.40	1.55
	Control	8.07	1.98	8.67	1.91	8.73	1.83
Blaming Others	DBT	7.20	1.66	5.20	1.82	5.33	1.80
	TA	8.60	1.50	6.07	1.62	5.47	1.77
	Control	8.60	1.30	8.53	1.88	8.60	1.76

The results of Table 3 showed that the scores of five components of acceptance, positive refocusing, refocusing on planning, positive reappraisal, and de-emphasizing increased more in the experimental groups compared to the control group from pre-test to post-test and follow-up stages. The scores of four components of self-blaming, rumination, catastrophizing, and other-blaming decreased more in the experimental groups compared to the control group from pre-test to post-test and follow-up stages.

Firstly, the assumptions of ANOVA, including the normality of data distribution, homogeneity of variances, and homogeneity of variance-covariance matrices, were examined. The normality of the cognitive emotion regulation data was confirmed by the Shapiro-Wilk test at the pre-test, post-test, and follow-up stages for all three groups, indicating a normal distribution of variables (P<.05). The homogeneity of variance of cognitive emotion regulation was examined with Levene's test and found to be non-significant (P>.05); Box's M test also showed that the homogeneity of the variance-covariance matrices was achieved (F=.74, Box's M=18.85, P>.05). The Mauchly's test of sphericity confirmed that there was hardly any identical correlation among all variables (P<.05). Moreover, the multivariate test for examining between-group differences in cognitive emotion regulation in the experimental groups (Wilks' Lambda effect) showed that only the test stages were significant (F=9.10, P=.001, effect size=.06), and the effects of group membership (F=2.81, P=.03, effect size=.44) and the interaction effect of test stages and group membership (F=1.06, P=.64, effect size=.37)

were not significant. Repeated measures ANOVA was reported in Table 4 to determine the effectiveness of the intervention methods on cognitive emotion regulation.

Table 4. Repeated Measures ANOVA for Determining the Effectiveness of Intervention Methods on Cognitive Emotion Regulation

Variable	Source	SS	Df	MS	F	p	Eta^2
Acceptance	Time	246.07	2	123.03	54.20	0.001	0.66
	Group	1.34	1	1.34	0.47	0.50	0.02
	Time*Group	2.16	2	1.08	0.48	0.62	0.02
Positive Refocusing	Time	218.40	2	109.20	54.71	0.001	0.66
	Group	0.28	1	0.28	0.09	0.77	0.003
	Time*Group	1.16	2	0.58	0.29	0.75	0.01
Refocusing on Planning	Time	242.87	2	121.43	72.52	0.001	0.72
	Group	0.28	1	0.28	0.08	0.78	0.003
	Time*Group	0.69	2	0.34	0.21	0.82	0.01
Positive Reappraisal	Time	178.42	2	89.21	48.75	0.001	0.64
	Group	8.71	1	8.71	2.65	0.12	0.09
	Time*Group	0.42	2	0.21	0.12	0.90	0.004
De-emphasizing	Time	128.69	2	64.34	33.42	0.001	0.54
	Group	2.84	1	2.84	0.62	0.44	0.02
	Time*Group	6.82	2	3.41	1.77	0.18	0.06
Self-Blaming	Time	230.47	2	115.23	59.87	0.001	0.68
	Group	0.54	1	0.54	0.11	0.74	0.004
	Time*Group	6.42	2	3.21	1.67	0.20	0.06
Rumination	Time	316.36	2	158.18	71.54	0.001	0.72
	Group	0.71	1	0.71	0.24	0.63	0.01
	Time*Group	6.49	2	3.24	1.47	0.24	0.05
Catastrophizing	Time	312.07	2	156.03	90.48	0.001	0.76
	Group	0.04	1	0.04	0.01	0.92	0.000
	Time*Group	4.02	2	2.01	1.17	0.32	0.04
Blaming Others	Time	114.42	2	57.21	25.80	0.001	0.48
	Group	14.40	1	14.40	3.41	0.08	0.11
	Time*Group	6.07	2	3.03	1.37	0.26	0.05

The results of Table 4 showed that there was no significant difference between groups in all components of cognitive emotion regulation in terms of group membership and the interaction of test stages and group membership, indicating no substantial difference between groups in terms of cognitive emotion regulation (P>.05), but there was a significant difference between them in all components of cognitive emotion regulation in terms of test stages (P<.001). The Bonferroni post-hoc test for comparing the effectiveness of intervention methods on cognitive emotion regulation based on test stages was reported in Table 5.

Table 5. Bonferroni Post-Hoc Test for Comparing the Effectiveness of Intervention Methods on Cognitive Emotion Regulation Based on Test Stages

Variable	Group	Pre-test-Post-test		Pre-test-Follow-up		Post-test – Follow-up	
		Mean Diff.	p	Mean Diff.	p	Mean Diff.	p
Acceptance	DBT	-3.73	0.001	-3.73	0.001	0.000	1.00
	TA	-3.53	0.001	-3.00	0.002	0.53	0.69
Positive Refocusing	DBT	-3.67	0.001	-3.40	0.001	0.27	1.00
	TA	-3.13	0.001	-3.00	0.001	0.13	1.00
Refocusing on Planning	DBT	-3.00	0.001	-3.53	0.001	-0.53	0.82
	TA	-3.33	0.001	-3.93	0.001	-0.60	0.47
Positive Reappraisal	DBT	-3.00	0.001	-2.67	0.001	0.33	1.00
	TA	-3.33	0.001	-2.87	0.001	0.47	0.75
De-emphasizing	DBT	-2.13	0.001	-1.73	0.02	0.40	1.00
	TA	-3.27	0.001	-2.93	0.001	0.33	1.00
Self-Blaming	DBT	3.67	0.001	2.47	0.001	-1.20	0.21
	TA	3.67	0.001	3.60	0.001	-0.07	1.00
Rumination	DBT	4.07	0.001	3.20	0.001	-0.87	0.36
	TA	4.20	0.001	4.40	0.001	0.20	1.00
Catastrophizing	DBT	4.47	0.001	4.07	0.001	-0.40	1.00
	TA	3.47	0.001	3.80	0.001	0.33	1.00
Blaming Others	DBT	2.00	0.01	1.87	0.01	-0.13	1.00
	TA	2.53	0.001	3.13	0.001	0.60	0.29

The results of Table 5 and the means table showed that both intervention methods, dialectical behavior therapy and transactional analysis, significantly increased acceptance, positive refocusing, refocusing on planning, positive reappraisal, and de-emphasizing and significantly decreased self-blaming, rumination, catastrophizing, and other-blaming at the post-test and follow-up stages (P<.05). Since both the difference between pre-test and post-test and the difference between pre-test and follow-up were significant. In other words, the methods of dialectical behavior therapy and transactional analysis improved cognitive emotion regulation, and the results were maintained at the follow-up stage.

4. Conclusion

Social anxiety is a chronic, prevalent, and debilitating disorder that causes increased difficulty in cognitive emotion regulation. Consequently, this study aimed to compare the effectiveness of dialectical behavior therapy and transactional analysis on cognitive emotion regulation in students with social anxiety.

The first finding of this study indicated that dialectical behavior therapy led to an improvement in cognitive emotion regulation (significant increase in acceptance, positive refocusing, refocusing on planning, positive reappraisal, de-emphasizing, and a significant decrease in self-blaming, rumination, catastrophizing, and other-blaming) in students with social anxiety at post-test and follow-up stages. Although few studies have been conducted in this area, this finding is consistent with the findings of previous research. For example, Rahmani Moghaddam et al. (2023) found that dialectical behavior therapy improved positive and negative cognitive emotion regulation strategies in physically-disabled individuals. Additionally, Esnaasharan et al. (2021) concluded that dialectical behavior therapy improved emotion regulation in women undergoing addiction treatment at post-test and three-month follow-up stages. Another study by Abdollahian et al. (2020) reported that dialectical behavior therapy increased positive cognitive emotion regulation strategies, including

acceptance, positive refocusing, refocusing on planning, positive reappraisal, de-emphasizing, and decreased negative cognitive emotion regulation strategies, including self-blaming, rumination, catastrophizing, and other-blaming in students with social anxiety disorder. Also, Fassbinder et al. (2023) found that dialectical behavior therapy played an effective role in improving emotion regulation. Based on the research of Abdollahian et al. (2020), it can be stated that in dialectical behavior therapy, individuals with symptoms of social anxiety learn to be aware of their emotional state at any moment, focus their attention on various ways of expressing and articulating emotions, and regulate their behavior accordingly. Thus, this therapeutic method helps individuals to accept their emotional state without any judgment and change factors that need to be changed, using appropriate cognitive regulation strategies suited to cognitive situations. Mindfulness exercises, emotion regulation, and distress tolerance, considering the constant and non-judgmental awareness of bodily sensations without trying to escape or avoid them, can reduce emotional reactions typically triggered by symptoms of social anxiety. Observing thoughts related to social anxiety symptoms without judgment may lead to the understanding that these are just thoughts and not necessarily reflective of reality or truth and should not necessarily cause avoidance or escape behavior. Additionally, in the process of dialectical behavior therapy intervention, individuals are asked to establish a different relationship with their unpleasant experiences and, by accepting and validating unpleasant feelings, be aware of how to respond to emotions appropriately and desirably. Therefore, it is logical that dialectical behavior therapy leads to improvement in cognitive emotion regulation in students with social anxiety.

The second finding of this study showed that transactional analysis led to an improvement in cognitive emotion regulation (significant increase in acceptance, positive refocusing, refocusing on planning, positive reappraisal, de-emphasizing, and a significant decrease in self-blaming, rumination, catastrophizing, and other-blaming) in students with social anxiety at post-test and follow-up stages. Although few studies have been conducted in this area, this finding aligns with the findings of previous research. For example, Hosseini Ravarizadeh et al. (2023) demonstrated that transactional analysis, except for the positive refocusing strategy, significantly impacted all strategies, including self-blaming, rumination, catastrophizing, other-blaming, acceptance, refocusing on planning, positive reappraisal, and de-emphasizing in incompatible couples. Additionally, Naziryy et al. (2023) found that transactional analysis improved cognitive emotion regulation strategies in incompatible couples. Another study by Dastmardi et al. (2022) reported that transactional analysis improved cognitive emotion regulation in students experiencing emotional failure. It can be stated that emotion regulation is a variable that can be enhanced through education. Thus, in the transactional analysis intervention method, emotion-focused and avoidance-focused strategies related to the Child ego state or outdated Parental information can be improved through teaching ego states, identifying various types of transactions, recognizing unconscious psychological games controlling their behavior, thereby enhancing emotional functioning and ultimately using positive, adaptive, and compatible cognitive emotion regulation strategies. Also, this intervention method helped individuals to communicate their messages more explicitly and achieve a better understanding of each other. Practicing the principles of transactional analysis allows individuals to add these habits to their behavioral repertoire and use constructive and appropriate behaviors such as acceptance, planning, positive reappraisal, problem-solving, etc., instead of tension-inducing behaviors like unwarranted criticism, blame, avoidance, escape, sarcasm, and so on, in problematic, stressful, and challenging situations. Therefore, it is logical that transactional analysis leads to improvement in cognitive emotion regulation in students with social anxiety.

The third finding of this study showed that there was no significant difference between the intervention methods of dialectical behavior therapy and transactional analysis in improving cognitive emotion regulation in students with social anxiety. Although no research was found in this area, it can be stated that both dialectical behavior therapy and transactional analysis are part of the third wave of psychotherapy, emphasizing the principle of acceptance. Dialectical behavior therapy, founded on the four components of mindfulness, distress tolerance, emotional regulation, and interpersonal effectiveness, was designed and developed by Linehan (1993) to establish a balance between change and acceptance, enabling individuals to regulate their

emotional responses to events. Similarly, transactional analysis, based on the here-and-now component, was designed and developed by Berne (1961) within the framework of communication psychology theory, initially aimed at solving emotional and behavioral problems. Moreover, dialectical behavior therapy uses strategies and techniques such as therapeutic contract establishment, chain analysis of thoughts, feelings, and behaviors, teaching mindfulness skills, distress tolerance, emotional regulation, interpersonal effectiveness, relaxation or self-soothing, attention shifting, emotion regulation, interpersonal skills, identifying self-needs and goals, anxiety control, self-care, and teaching how to generalize dialectical behavior therapy skills to real life. Transactional analysis employs strategies and techniques such as therapeutic contract establishment, structural analysis of ego states, functional analysis of emotional states, teaching how to draw an egogram, analysis of rejection and contamination states, teaching the importance of communication and types of transactions, understanding the concept of strokes and examining their types, drawing a stroking diagram, life script analysis and its analysis, teaching how life scripts form and how to exit undesirable life scripts, recognizing genuine feelings and self-destruction, understanding and examining the role and function of promoting and inhibiting messages in thinking, feeling, and behavior, teaching psychological games and time structuring, and teaching how to apply transactional analysis skills in real life. Therefore, given the similarities between the two intervention methods, it is logical that there was no significant difference between them in terms of improving cognitive emotion regulation.

The main limitations of this study were the use of self-report tools, conducting the research on only one gender and grade level (twelfth-grade girls), and using purposive non-random sampling for selecting samples. Consequently, future researchers could use other data collection methods such as structured interviews or conduct the current study on male students and compare the results with those of this study. Another research suggestion is the use of longer-term follow-up periods such as four months, six months, or even longer. According to the results of this study, therapists, counselors, and psychologists can use both dialectical behavior therapy and transactional analysis methods alongside other therapeutic methods to improve cognitive emotion regulation in students with social anxiety. Additionally, education authorities and stakeholders can consider intervention methods of dialectical behavior therapy and transactional analysis in their planning to improve cognitive emotion regulation in students and take effective steps toward improving various characteristics of students.

Ethical Considerations
Ethical principles and standards were observed in this study.

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Authors' Contributions
The first author was responsible for data collection and analysis, and the other authors supervised data analysis and manuscript writing.

Conflict of Interest
There were no conflicts of interest.

References

Abdollahian S, Rezaei A, Jalili Shishwan A, Moheb N. (2020). The effectiveness of group dialectical behavior therapy on cognitive emotion regulation in students with social anxiety disorder. *Journal of Nursing Education*. 9(4): 52-61. [Persian]

Adams GC, Wrath AJ, Le T, Alaverdashvili M. (2019). A longitudinal exploration of the impact of social anxiety and individual attachment on depression severity. *Journal of Affective Disorders*. 257: 250-256. doi: 10.1016/j.jad.2019.07.051

Brandl F, Corbi ZLH, Bratec SM, Sorg C. (2019). Cognitive reward control recruits medial and lateral frontal cortices, which are also involved in cognitive emotion regulation: A coordinate-based meta-analysis of fMRI studies. *NeuroImage*. 200: 569-673. doi: 10.1016/j.neuroimage.2019.07.008

Cambra-Fierro J, Gao L, Melero-Polo I. (2021). The power of social influence and customer–firm interactions in predicting non-transactional behaviors, immediate customer profitability, and long-term customer value. *Journal of Business Research*. 125: 103-119. doi: 10.1016/j.jbusres.2020.12.013

Chapman AL, Gratz KL, Tull MT. (2011). *Dialectical behavioral therapy techniques to deal with anxiety disorders*. (Translate by SeyyedMorteza ArjmandiNasab, 2017), Tehran: Arjmand Publisher.

Ciucur D. (2013). A transactional analysis group psychotherapy programme for improving the qualities and abilities of future psychologists. *Procedia – Social and Behavioral Sciences*. 78: 576-580. doi: 10.1016/j.sbspro.2013.04.354

Connor KM, Davidson JR, Churchill LE, Sherwood A, Foa EB, Weisler RH. (2000). Psychometric properties of the social phobia inventory (SPIN): New self-rating scale. *British Journal Psychiatry*. 176: 379-386. doi: 10.1192/bjp.176.4.379

Dastmardi Z, Moghtader L, Akbari B. (2022). Comparison of the effectiveness of self-compassion and reciprocal behavior analysis on cognitive emotion regulation of students with emotional failure experience. *Journal of Applied Family Therapy*. 2(4): 158-175. [Persian] doi: 10.22034/aftj.2021.301918.1176

DeCou CR, Comtois KA, Landes SJ. (2019). Dialectical behavior therapy is effective for the treatment of suicidal behavior: A meta-analysis. *Behavior Therapy*. 50(1): 60-72. doi: 10.1016/j.beth.2018.03.009

Dryman MT, Heimberg RG. (2018). Emotion regulation in social anxiety and depression: a systematic review of expressive suppression and cognitive reappraisal. *Clinical Psychology Review*. 65: 17-42. doi: 10.1016/j.cpr.2018.07.004

Efe YS, Ozbey H, Erdem E, Hatipoglu N. (2020). A comparison of emotional eating, social anxiety and parental attitude among adolescents with obesity and healthy: A case-control study. *Archives of Psychiatric Nursing*. 34(6): 557-562. doi: 10.1016/j.apnu.2020.09.007

Egorova E, Clukhov G, Shikov E. (2022). Customer transactional behaviour analysis through embedding interpretation. *Procedia Computer Science*. 212: 284-294. doi: 10.1016/j.procs.2022.11.012

Esnaasharan S, Yazdkhasti F, Orayzi H. (2021). The effect of dialectical behavior therapy (DBT) on emotional regulation and distress tolerance of addicted women leaving: The mediating role of mindfulness, effective communication and emotional cognitive regulation strategies. *Knowledge & Research in Applied Psychology*. 22(2): 1-12. [Persian] doi: 10.30486/jsrp.2019.569930.1371

Fassbinder E, Schweiger U, Martius D, Wilde OB, Arntz A. (2016). Emotion regulation in schema therapy and dialectical behavior therapy. *Frontiers in Psychology*. 7(1373): 1-19. doi: 10.3389/fpsyg.2016.01373

Fitzpatrick S, Bailey K, Rizvi SL. (2020). Changes in emotions over the course of dialectical behavior therapy and the moderating role of depression, anxiety, and posttraumatic stress disorder. *Behavior Therapy*. 51(6): 946-957. doi: 10.1016/j.beth.2019.12.009

Foynes MM, Singh RS, Landes SJ. (2023). A functional approach to the assessment and treatment of non-suicidal self-injury in veterans: A dialectical behavior therapy–informed perspective. *Cognitive and Behavioral Practice*. 30(1): 64-81. doi: 10.1016/j.cbpra.2021.10.005

Fredrick JW, Becker SP, Kofler MJ, Jarrett MA, Burns GL, Luebbe AM. (2020). Disentangling the effects of attentional difficulties on fears of social evaluation and social anxiety symptoms: Unique interactions with sluggish cognitive tempo. *Journal of Psychiatric Research*. 131: 39-46. doi: 10.1016/j.jpsychires.2020.08.030

Garnefski, N., & Kraaij, V. (2006). Cognitive emotion regulation questionnaire development of a short 18-item version (CERQ-short). *Personality and Individual Differences*. 41(6): 1045-1053. doi: 10.1016/j.paid.2006.04.010

Gottlieb ALB, Klinger CL, Sampaio D. (2022). Introduction to dialectical behavior therapy for psychiatrists and psychiatry residents. *Advances in Psychiatry and Behavioral Health*. 2(1): 241-251. doi: 10.1016/j.ypsc.2022.03.008

Hashemi Z, Eyni S, Shahjoee T. (2022). The effectiveness of metacognitive therapy brain-based executive functioning training on cognitive-attention syndrome in students with social anxiety. *Education Strategies in Medical Sciences*. 15(2): 122-130. [Persian]

Hosseini Ravarizadeh N, Naziryy G, Davoodi A, Fath N. (2023). The effectiveness of transactional analysis (TA) on the relationship attributions, cognitive emotion regulation strategies and differentiation of incompatible couples. *Rooyesh-e-Ravanshenasi Journal*. 12(2): 117-128. [Persian]

Huh HJ, Kim KH, Lee HK, Chae JH. (2017). The relationship between childhood trauma and the severity of adulthood depression and anxiety symptoms in a clinical sample: The mediating role of cognitive emotion regulation strategies. *Journal of Affective Disorders*. 213: 44-50. doi: 10.1016/j.jad.2017.02.009

Jangezahi Shastan N, Kord Tamini B, Karbalaei Harofteh FS. (2021). The role of cognitive emotion regulation in predicting high-risk behaviors mediated by welfare school for 14-17 year old girls in Saravan. *Iranian Journal of Educational Sociology*. 4(1): 86- 94. doi: 10.52547/ijes.4.1.86

Kobezak HM, Gibb BE. (2020). Prospective associations between social anxiety and depression in youth: The moderating role of maternal major depressive disorder. *Journal of Adolescence*. 82: 19-22. doi: 10.1016/j.adolescence.2020.05.003

Li X, Gao S, Yang W, Si Y, Liu Z. (2022). Purchase preferences-based air passenger choice behavior analysis from sales transaction data. *Theoretical Computer Science*. 928: 61-70. doi: 10.1016/j.tcs.2022.06.013

McLean B. (2023). Transactional analysis and relationship psychotherapy: A need for renewed interest and contemporary thinking. *Transactional Analysis Journal*. 53(2): 113-129. doi: 10.1080/03621537.2023.2184144

Mohsenabadi H, Fathi-Ashtiani A. (2021). Evaluation of psychometric properties of the Persian version of the short form of cognitive emotion regulation questionnaire (CERQ-18). *Payesh*. 20(2): 167-178. [Persian] doi: 10.52547/payesh.20.2.167

Momeni Kh, Radmehr F. (2020). The effectiveness of meta-cognitive therapy on cognitive attention syndrome in female students with social anxiety disorder. *Knowledge & Research in Applied Psychology*. 21(2): 32-42. [Persian] doi: 10.30486/jsrp.2019.572759.1420

Motevalli S, Salahshour HM, Bailey RP. (2023). The mediating role of cognitive flexibility in the relationship between cognitive emotion regulation strategies and mindfulness in patients with type 2 diabetes. *Journal of Affective Disorders*. 339: 676-682. doi: 10.1016/j.jad.2023.07.043

Navabi M, Goodarzi K, Roozbahani M, Kordestani D. (2019). Effectiveness of problem solving skills training on psychological hardiness and cognitive emotion regulation strategies in high school students. *Iranian Journal of Educational Sociology*. 2(4): 158-165. 10.29252/ijes.2.4.158

Naziryy Gh, Hosseini Ravarizadeh N, Davoodi A, Fath N. (2023). Comparison of the effectiveness of cognitive-behavioral couple therapy (CBCT) and transactional analysis (TA) on the cognitive emotion regulation strategies of incompatible couples. *Journal of Family Research*. 18(4): 657-673. doi: 10.48308/JFR.18.4.657

Rahmani Moghaddam F, Bagherzadeh Golmakani Z, Touzandehjani H, Nejat H. (2023). Exploring the impact of dialectical behavior therapy on emotional regulation and rumination among the physically disabled people using the services of the welfare organization of Mashhad. *Research in Clinical Psychology and Counseling*. 13(1): 123-138. [Persian] doi: 10.22067/tpccp.2023.75967.1269

Rey L, Neto F, Extremera N. (2020). Cyberbullying victimization and somatic complaints: A prospective examination of cognitive emotion regulation strategies as mediators. *International Journal of Clinical and Health Psychology*. 20(2): 135-139. doi: 10.1016/j.ijchp.2020.03.003

Salamin V, Kratzel A, Gothuey I, Guenot F. (2021). Compliant patients with borderline personality disorder non-responsive to one-year dialectical behavior therapy: Outcomes of a second year. *Journal of Behavioral and Cognitive Therapy*. 31(2): 115-124. doi: 10.1016/j.jbct.2021.01.001

Spencer SD, Guzick AG, Cervin M, Storch EA. (2023). Mindfulness and cognitive emotion regulation in pediatric misophonia. *Journal of Contextual Behavioral Science*. 29: 182-191. doi: 10.1016/j.jcbs.2023.07.005

Vu HT, Pham TN, Nishijo M, Yokawa T, The TP, Takiguchi T, et al. (2023). Impact of dioxin exposure on brain morphometry and social anxiety in men living in the most dioxin-contaminated area in Vietnam. *Journal of Psychiatric Research*. 166: 169-177. doi: 10.1016/j.jpsychires.2023.09.002

Yang P, Crous Y, Balli-Borrero NA, Scott BL, Trujillo AM, Choi BY, Robles-Ramamurthy B. (2022). Antiracism work in schools: Using dialectical behavior therapy skills to empower South Texas educators. *Journal of the American Academy of Child & Adolescent Psychiatry*. 61(10): 1296-1302. doi: 10.1016/j.jaac.2022.03.031

Yi Z, Liang Z, Xie T, Li F. (2023). Financial risk prediction in supply chain finance based on buyer transaction behavior. *Decision Support Systems*. 170: 113964. doi: 10.1016/j.dss.2023.113964