



# Rational Emotive Behavior Therapy Compared to Client-Centered Therapy for Outpatients: A Randomized Clinical Trial with a Three Months Follow up

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## Abstract

This study evaluated the effectiveness of Rational Emotive Behavior Therapy (REBT) for outpatients with GAD and mild depression and tested the effectiveness of REBT to an active, alternative treatment, Humanistic, Client-Centered Therapy (HCCT) in a clinical setting. The study aimed to understand whether REBT is a more effective treatment than HCCT through testing both pre-treatment and including three-month follow-up results. Thirty-one participants were assessed for overall psychopathological variables such as anxiety, depression, levels of unhealthy negative emotions and regret, activation, hope and nothingness as ontological well-being (OWB) variables before and after a 12 week intervention as well as during a three-month follow-up. We randomly assigned participants to either REBT or HCCT. The psychotherapists followed strict guidelines to incorporate the distinctive features of REBT. This included educating clients about irrational and rational beliefs, introducing the binary model of emotional distress, using a range of disputing techniques (logical, philosophic, and functional), and discussing alternative rational beliefs such as unconditional acceptance of self, others, and life. The HCCT group was treated with Rogerian techniques such as unconditional positive regard, accepting negative emotions, and reflection. The clients completed the Beck Depression Inventory, Beck Anxiety Inventory, Shortened Attitude and Beliefs Scale, the Ontological Well-being Scale, and the healthy and unhealthy negative emotions scale. The outcomes were analyzed using split plot ANOVA with post hoc, Reliable Change Index, and Clinical Significance Change Index. Although split-plot ANOVA results showed that there was not significant difference in main effect of treatment between REBT and HCCT groups, further detailed analysis such as main effect of time, time by interaction values, Reliable Change Indices, clinically significant change analysis, and post hoc indicated that REBT treatment was more beneficial than HCCT treatment at any of the three time points in most variables. Another experimental study with larger sample is needed to confirm the result in future studies.

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**Keywords** REBT · Client-centered therapy · Generalized anxiety disorder · Outcome study

## Introduction

Ellis' (1955) rational emotive behavior therapy (REBT) represents one of the first forms of cognitive behavior therapy (CBT) (see Hollon & DiGiuseppe, 2010). REBT has maintained some distinctive features that differentiate it from other types of CBT. REBT posits those irrational beliefs (IBs) are the primary core of psychological disturbance and that changing one's irrational beliefs (IBs) about events leads to significant positive emotional and behavioral change. The four IBs are demandingness (DEM), characterized by inflexible and absolutistic thinking; awfulizing (AWF); frustration intolerance (FI); and global evaluation of human worth about the self or self-condemnation (SC). Each of these IBs has an alternative rational counterpart. RBs are associated with negative, albeit non-disturbed emotions and positive mental health. REBT describes the rational alternative to DEM as non-demanding preferences (NDP). The rational alternative to AWF is realistic negative evaluations (RNE). The rational alternative to frustration intolerance is frustration tolerance (FT). For self-condemnation, the rational alternative is self-acceptance (SA) DiGiuseppe et al., (2014) provide definitions for these four IBs and the four RB cognitive processes.

Strong evidence indicates that IBs correlate with psychological disturbance and that RBs are negatively correlated with disturbance (Víšlă et al., 2016). Also, rational beliefs are positively associated with adjustment. Overall, research supports the hypothesized relationship among irrationality, rationality, and disturbance.

Considerable outcome research supports the efficacy and effectiveness of REBT. Smith and Glass's (1977) original meta-analytic review of psychotherapy outcome studies concluded that RET (as Ellis called it then) was the second most effective psychotherapy after systematic desensitization. More than 350 REBT outcome studies appeared from the 1960s to 2001 (see DiGiuseppe & O. David, 2015; DiGiuseppe & Doyle, 2019 for a summary). Many of these studies compared REBT to no treatment, waiting lists, or placebo controls. They support the efficacy of REBT across a wide range of clinical problems. These include social, test anxiety, math anxiety, performance anxiety, public speaking anxiety, agoraphobia, neuroticism, stress, depression, anger, teacher burnout, personality disorder, obsessive-compulsive disorder, couples' relationship problems, alcohol abuse, poor dating skills, overweight/obesity, school discipline problems, unassertiveness, Type A behavior, parenting problems, children's emotional reactions to learning disabilities, school underachievement, sexual fears and dysfunction, and bulimia.

Despite the many studies supporting REBT, most of these were published before the development of current stricter standards for establishing empirically supported treatments. Presently, the criteria for empirically supported treatments require that studies compare a therapy to a placebo or an existing intervention such as supported psychotherapy or another active treatment. Also, studies must use a treatment manual or a similarly well-defined outline of treatment procedures to maintain

homogeneity between practitioners. Most of these studies failed to use participants who met diagnostic criteria for a specific disorder or clinical problem. Instead, they included participants who received a score above a designated cut-off on a psychometric scale of disturbance. Most studies did not use a treatment manual or an integrity check to ensure that therapists followed the protocol. Further, the characteristics of samples must now be specified before recruitment. As such, many of the older studies provided weak support for REBT and failed to meet the modern standards of psychotherapy research studies (APA Taskforce 2006).

Recently, some meta-analytic reviews of REBT have limited the inclusion of studies to those that fulfill the modern standards of acceptability. A review by Gonzalez et al., (2004) used a more restrictive inclusion criteria resulting in nineteen rigorous studies exploring the efficacy of REBT. They selected studies that included participants who were not clinically disturbed and where REBT was used to increase participants' present function or serve as a preventive intervention. They concluded that REBT is efficacious for children and adolescents presenting with psychological disturbance and improved the functioning of those without psychological disturbances.

David et al., (2018) completed a meta-analysis of a more selective sample of REBT outcome studies. They included studies that met the more modern psychotherapy research standards using the eight methodological criteria (Cuijpers et al., 2010). They excluded 502 studies and included 85 articles; 68 used a between-group design and 39 were within-group analyses. The results indicated that REBT is an efficacious psychotherapy (between-group analysis  $d=0.58$ , within-group analysis  $d=0.56$ ).

Because REBT was one of the original forms of CBT, interventions historically advocated by REBT are often incorporated in other forms of CBT (DiGiuseppe et al., 2021; Matweychuk et al., 2019). As a result, some studies test treatments that combine REBT and other CBT interventions (e.g., Meaden et al., 2013; Gavița et al., 2012). Many such studies show that REBT combined with other CBT interventions successfully improved patients' symptoms (Gould et al., 1997; Mersch et al., 1989; Mogoșe et al., 2014; Montgomery et al., 2014). Such studies provide only indirect support for classical REBT because one cannot attribute the efficaciousness to the general CBT and ERBT components of the treatment (Stefan et al., 2019; Szentagotai & Freeman, 2007).

Strong evidence for REBT's efficacy would rest on studies that included what Ellis (1994) referred to as the classical REBT and Dryden (2015) called the distinctive features of REBT. These characteristics include: (1) using the distinctive ABC model; (2) identifying and disputing IBs rather than cognitive distortions or automatic thoughts; (3) aiming to replace unhealthy negative emotions with healthy negative emotions; (4) preparing patients for the worst-case scenario instead of pursuing evidence that a bad event will not occur; (5) investigating the presence and prioritizing the treatment of secondary or meta-emotional disturbance, teaching patients to accept themselves, others and the world unconditionally.

Experimental studies that incorporated classical REBT and also meet the current criteria of outcome studies include Shelley et al.' study on treating schizophrenia (2001); Sava et al.' study on treating major depressive disorder (2009); Thockchom & Suresh' study on treating depression (2020); David et al.' study on treating

nonpsychotic and major depressive disorder (2018); Wang et al.,' study on treating dysthymic disorder (1999); Aler et al.,' study on treating dysthymia that compared REBT with standard care (2016); and Eifediyi, Ojugo, & Aluede' study on anxious university students (2017). All these studies showed REBT to be an efficacious therapy.

Leahy (1996) noted that all cognitive therapists owe a debt to Ellis; however, his work is not as widely acknowledged as it deserves because Ellis pursued a clinical rather than a research career. Thus, he produced little academic research. More research is needed to demonstrate the efficacy of REBT compared to bonafide treatments. This study attempted to accomplish this task.

We chose to compare REBT to HCCT for several reasons. First, Ellis' and Rogers' approaches are well known since they both demonstrated their approaches in the famous Gloria recordings in 1965 that have been viewed by generations of students. Second, HCCT emphasizes the importance of unconditional self-acceptance as REBT does; however, it accomplishes this by the therapist's actions alone and not by direct teaching or Socratic Questioning as in REBT. Third, HCCT is more non-directive (Gibbard & Hanley, 2008) compared to REBT's active directive approach.

## Method

### Participants

Participants were recruited randomly from people seeking mental health services from a counseling center in Istanbul, Turkey. Potential participants were asked to volunteer for a 12 week study on psychotherapy. The enticement to volunteer was a 50% discount on the psychotherapy session fees.

### Inclusion and Exclusion Criteria

The inclusion and exclusion information were assessed through the counseling center's self-report intake forms and two 20 min clinical interviews, one by a clinical psychologist and the other by a psychiatrist. To be included, participants had to meet the diagnosis criteria of Generalized Anxiety Disorder (GAD) of DSM-5 (APA, 2013) with comorbid mild depression. The examining psychologist and psychiatrist collaboratively made this decision. Agreement between both examiners was required for the participant to be included. Participants were excluded if they met the diagnosis for bipolar, schizophrenia, schizoaffective disorder; alcohol and drug abuse; personality disorders or sexual dysfunction; or trauma-related, somatic, or eating disorders. Participants were also excluded if they were taking psychotropic medication at the time of recruitment. This study represents treatment by psychotherapy alone.

## Ethics and Informed Consent

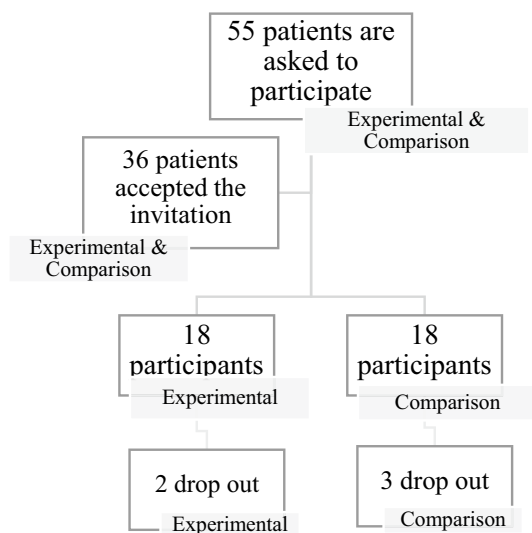
Approval was obtained from the Ethical Review Board of Arel University before the study began.

All participants were informed that their data would be kept confidential, that they could withdraw from the study at any time without clarification, and that they could quit the research program without affecting their subsequent course of treatment. Participants were informed that no harm was expected from the intervention. They were informed that in case of any clinical deterioration (for any reason), the responsible clinical psychologist/psychiatrist could advise discontinuation of trial participation.

Of 55 patients who completed the intake and screening processes and who met the inclusion criteria, thirty-six patients (65.45%) accepted the invitation to participate in the study. The consort chart appears in Fig. 1. Five patients dropped out and did not complete the full 12 weeks of therapy for the following reasons: one moved to another city; two participants in the HCCT condition did not provide a reason; and two participants in the REBT group discontinued treatment for financial reasons. The final number of participants was 31 participants (12 females, 19 males).

All participants resided in metropolitan Istanbul. The mean age was 24.5 years ( $SD=9.42$ ) for the REBT group (5 females, 11 males) and 28.93 years ( $SD=9.29$ ) for the HCCT group (nine females, six males). All patients met the criteria for mild depression and had symptoms of general anxiety disorders. None of the patients were taking psychotropic medication. Three clients (18.8%) in the REBT group and four clients (26.7%) in the HCCT group had received psychotherapy in the past. Table 1 presents the demographic information and clinical characteristics of the REBT participants and the HCCT groups at intake.

**Fig. 1** Consort Chart of Participants drop out and completion rate



**Table 1** Comparisons of Demographic and basic clinical characteristics at before treatment for Experiment Group (REBT) and Control Group (HCCT)

	REBT (n = 16)	TSU (n = 15)	t	p
Age M (SD)	24.50 (9.423)	28.93 (9.277)	-1.319	.198
Gender (%)			1.624	.115
Female	5 (31.3)	9 (60)		
Male	11 (68.8)	6 (40)		
Previous treatment n (%)			-.512	.613
No	13 (81.3)	11 (73.3)		
Yes	3 (18.8)	4 (26.7)		

\* $p < 0.05$ , HCCT Humanistic client centered therapy as control group/Treatment as usual, REBT Rational emotive behavior therapy as experimental group, Age M Age mean, n Sample size

## Psychotherapists

In the REBT condition, the psychotherapist was a clinical psychologist and certified REBT supervisor with ten years of experience practicing REBT. This therapist completed the associate fellowship and supervision training program offered by the Albert Ellis Institute in New York City. Three therapists provided psychotherapy for the comparison treatment group. These therapists had one year of training in HCCT and were certified psychologists in Turkey with five, six, and eight years of experience, respectively. They were instructed not to use any REBT or CBT interventions with the patients who participated in the study. All the therapists were supervised weekly for an hour by a psychiatrist throughout the treatment process to ensure they followed their respective treatment protocols.

## Statistical Procedures

The data were collected for both experimental and control groups before treatment, after treatment (end of the 12th week), and a 3 month post-treatment (follow up). The Kolmogorov–Smirnov test results indicated that the skewness and kurtosis values of pre-, post-, and follow-up assessments for both the REBT and HCCT groups' data were normally distributed. According to Tabachnick and Fidell (2013), the skewness and kurtosis values should be between +1.5 and -1.5 or +2 and -2 (George & Mallery, 2010) to be considered normally distributed. The skewness and kurtosis values were between +1.5 and -1.5 or +2 and -2. Prior to starting analysis, in order to test of equality of the groups' Comparisons of Pre-Tests Measures between REBT Experimental and the HCCT Comparison Groups has been completed (Table 2).

To evaluate the effect of two different applications (REBT and HCCT) on the participants' Irrational Beliefs, Depression, Anxiety, Life Satisfaction (OWB), Unhealthy and Healthy Negative Emotions, we used a split-plot ANOVA. These

**Table 2** Comparisons of Pre-Tests Measures Between REBT Experimental and the HCCT Comparison Groups

	Group	N	M	SD	T	df	P (2-tailed)
SGABS	REBT	16	83.5	15.9	1.195	29	.242
	HCCT	15	76.73	15.93			
BDI-II	REBT	16	24.37	9.7	0.549	29	.058
	HCCT	15	21.6	17.59			
BAI	REBT	16	40.18	11.27	1.963	29	.059
	HCCT	15	31.06	14.48			
OWB_ACT	REBT	16	20.25	4.09	2.763	29	.010*
	HCCT	15	15.73	4.99			
OWB_REG	REBT	16	23.12	6.57	3.191	29	.003*
	HCCT	15	15.87	6.05			
OWB_NTH	REBT	16	17.12	6.07	1.404	29	.171
	HCCT	15	14.33	4.87			
OWB_HOPE	REBT	16	19.75	8.91	.329	29	.745
	HCCT	15	18.80	6.98			
UNE (Dys)	REBT	16	26	4.79	1.646	29	.111
	HCCT	15	23	5.35			
HNE (Fon)	REBT	16	28.81	5.81	1.114	29	.275
	HCCT	15	26.6	5.2			

*SGABS* Short form of attitudes and beliefs scale, *BDI-II* Beck depression inventory-II, *BAI* Beck anxiety inventory, *OWB\_ACT* Ontological well-being- activation sub-scale, *OWB\_REG* Ontological well-being- regret sub-scale, *OWB\_NTH* Ontological well-being-nothingness sub-scale, *OWB\_HOPE* Ontological well-being- hope sub-scale, *UNE (Dys)* Unhealthy negative emotions (Dysfunctional emotions), *HNE (Fon)* Healthy negative emotions (Functional emotions), *HTTC* Humanistic client centered therapy, *REBT* Rational emotive behavior therapy

covered both between- and within-group comparisons across the three time points. We also performed Post hoc analysis with a Bonferroni adjustment.

Additionally, Effect Sizes (ES) were calculated for all measures using Cohen's (1988) *d*. The meaning of effect size varies by context. However, the standard interpretations offered by Cohen (1988) are as follows: ESs were considered small if  $d=0.2$ , medium if  $d=0.5$ , and large if  $d=0.8$ " ESs. *Sdiff* is the standard error of difference for each measure and was calculated from its standard deviation and reliability.

Statistical significance is not a direct indicator of ES but a function of sample size, ES, and *p* level. Therefore, in addition to tests of significance, clinically significant change scores were calculated using the Reliable Change Index (RCI: Jacobson & Truax, 1991). This method shows the degree of change each participant must pass to demonstrate that their change is not due to chance. A participant was considered to have made a clinically significant improvement if RCI is greater than 1.96 (Wise, 2004). The RCIs were derived from the psychometric scores of the outcome measure used to estimate change. The formula divides the difference between pre-treatment

and post-treatment scores by the standard error of measurement (SE). Cut-off B was defined as the point 2 SDs within a recognized functional mean (Cut-off B =  $M_{\text{non-clinical}} + 2 SD_{\text{non-clinical}}$ ) (Bauer et al., 2004).

Jacobson and Traux (1991) recommend a two-step process to calculate the RCI. First, they recommend establishing a cutoff score for a measure that separates the ‘nonclinical’ population from the ‘clinical’ population. Cut-off B is defined as “the point 2 SD within a recognized nonclinical mean” (Jacobson & Traux, 1991, p. 13). Note that this cut-off score can only be utilized when nonclinical normative data is also available. The reliable change for each client in experimental and comparison treatment groups was calculated using the following formula:

$$\text{Reliable Change} = \frac{X_1 - X_2}{S_{\text{diff}}}$$

The RCI adjusts for the effects of regression to the mean by taking the test–retest reliability into account (Jacobson et al., 1999). In general, RCI values exceeding +1.645 and falling below −1.645 (=0.10 for two-tailed prediction) are usually defined as reliable changes in the dependent measures, i.e., indicating reliable improvement or reliable deterioration.

Additionally, the Clinical Significance Index (CSI) was calculated for each client, and these values were assigned to the following categories: no change clients, deteriorated clients, and clinically improved clients. The methods outlined by Jacobson and Traux (1991) were used to calculate the clinical significance of cut-off scores. Criterion scores for each measure to assign participants to these categories appear in Table 5 for the REBT group and in Table 6 for the HCCT group.

## Measures

### Shortened General Attitude and Belief Scale (SGABS: Lindner et al., 1999)

This measure of irrational and rational beliefs is a shortened version of Bernard’s (1998) General Attitude and Belief Scale and includes 26 items. The scale is widely used in REBT research. A Turkish translation and adaptation of the scale was performed by Artiran (2019b). Cronbach’s Alpha measuring internal consistency for the total scale score for the participants in this study was 0.91.

### Beck Depression Inventory—Turkish Form (BDI-TF: Hisli (1989))

The BDI-TF is a translation of the original English version of the Beck Depression Inventory (Beck et al., 1961) into Turkish. It consists of 21 items; each item offers four Likert choices, each describing a different intensity (rated from 0 to 3) of depression symptoms. The scores range between 0 and 63. The Turkish version of the BDI-TF has good psychometric properties. Cronbach’s Alpha for internal consistency was 0.86 (Avşar, 2007). For the participants in this study, Alpha was 0.93.



### **Beck Anxiety Inventory—Turkish Form (BAI-TF: Ulusoy et al., 1998)**

The BAI-TF is a translation into Turkish of the Beck Anxiety Inventory (Beck & Steer, 1984). The BAI-TF consists of 21 items. There are two sub-scales labeled “subjective anxiety” and “somatic symptoms.” The higher values taken from the total score of the scale indicate a high level of anxiety. It has been determined that the scale has sufficient reliability and validity and a Cronbach’s alpha coefficient of 0.92 (Ulusoy Et al., 1998). In this study, the Cronbach Alpha reliability coefficient was 0.94.

### **Ontological Well-Being (OWB: Şimşek & Kocayörük, 2013)**

The Ontological Well-Being scale measures the person’s view of their life as a project and assesses their satisfaction and dissatisfaction in their life, the past, present, and future. The OWB has four sub-factors: activation (OWB-ACT), regret (OWB-Reg), nothingness (OWB-NTH), and hope (OWB-HOPE), with a total of 24 items. The Regret subscale consists of 7 items. Nothingness consists of 6 items. The Activation subscale has five items. The hope subscale consists of 7 items. Sample items include, ‘I look at the part my PAST life... I’m Proud’, ‘I feel disappointed’ and ‘I feel regret’; ‘When I look nowadays to my life... ‘I feel aimless,’ ‘I feel tired,’ ‘I feel motivated.’ When I look at the FUTURE of my life... ‘I am hopeful,’ ‘I feel strong,’ ‘I feel confident.’

This scale uses a Likert format with choices ranging between 1 and 5. The participant is asked to select the most suitable one for each item. Cronbach’s alpha coefficient was found to be high ( $\alpha=0.91$ ) for the whole scale. These high reliability estimates were reflected in corrected item-total correlations ranging from 0.42 to 0.62 for ‘regret’, 0.64 to 0.78 for ‘hope’, 0.49 to 0.75 for nothingness, and 0.46 to 0.70 for ‘activation’. Corrected item-total correlations were found to be within a range of 0.34 and 0.63 for the whole scale. In this study, the Cronbach  $\alpha$  values for the total scale was 0.90. For the Regret subscale,  $\alpha$  was 0.92. For the Activation subscale, it was 0.87 and for the Nothingness subscale, 0.77. Finally, for the Hope subscale,  $\alpha$  was 0.95.

### **The Form of Unhealthy Negative Emotions (UNE) and Healthy Negative Emotion (HNE)**

The scale was created by the first author (MA). It is based on the REBT Self-Help Form, which REBT practitioners commonly use in sessions or as homework for clients between sessions. It asks participants to rate their level of emotional experiences using a Likert scale, 1 (never) to 5 (always). The items reflect eight Unhealthy Negative Emotions (UNEs) and eight Healthy Negative Emotions (HNEs) as defined by Ellis. The UNEs are anger/rage, anxiety/fear, guilt, problematic jealousy, problematic envy, depression (depressed mood), hurt, and sorrow. The HNEs are annoyance, concern, sadness, regret/remorse, embarrassment, disappointment, healthy

jealousy, healthy envy. Data for all the measures were submitted to reliability analysis in SPSS 20 using Coefficient Alpha to show that the scales are unidimensional, that essential tau-equivalence has been established, and that there are no error correlations. The combined form had high internal consistency values as Cronbach  $\alpha=0.88$ , UNE had Cronbach  $\alpha=0.81$ , and HNE had Cronbach's  $\alpha=0.73$ .

## Procedures

The 36 clients were randomly and equally distributed to both the HCCT group and the REBT group.

## Interventions

### REBT Group

For the REBT group, the treatment occurred once a week for 12 weeks. Each session lasted 50 min. Before starting the intervention in both groups, the therapists listened carefully to the participants about their problems and emotional disturbances. The therapist spent time building rapport and ensuring close patient engagement in preparation for therapy. This took one session to complete. A certified REBT supervisor with ten years of experience as an REBT therapist created an REBT-based manual. The manual was created from *A Practitioner's Guide to Rational-Emotive Behavior Therapy (3 ed)* (DiGiuseppe et al., 2014) and *A Cross-Cultural Redefinition of Rational Emotive and Cognitive Behavior Therapy* (Artiran, 2019a). The manual instructed the practitioner to follow the interventions below to test REBT:

- 1- Specific disputation techniques were used to target the participants' irrational beliefs: logical, semantic, functional, and philosophic. The therapists disputed only irrational beliefs and *avoided* challenging or targeting inferences, negative automatic thoughts, or cognitive errors.
- 2- The therapist hypothesized that the negative reality reported by the client was accurate and avoided using experimentally (evidence-based) disputes. For instance, the therapist asked the client, *'I hear you saying you are being treated unfairly by your family. Let us assume that you are right without seeking any evidence.'*
- 3- The therapist taught the bifactor model of emotions proposed by REBT. This model distinguishes between the unitary and binary models of emotion. Clients were asked not to rate their emotions but instead take the emotions into two categories as in REBT.
- 4- The therapist displayed and taught the concepts of unconditional self, other, and life acceptance during sessions.
- 5- The therapist engaged in role- play with the clients.
- 6- REBT techniques such as Rational Imagery, rehearsal of rational self-statements, and Letter to Mr. Rational were used in sessions.

- 7- An Excerpt from Ellis' book summarized in 10 pages was given to the clients as a reading assignment.
- 8- REBT Self-Help forms were given to the clients. Activities were executed within the sessions and were incorporated into daily life through homework.

**Initial Phase of Treatment**—In the first, second, and third sessions, the therapist introduced the ABC model and the importance of the B-to-C link, explained the differences between irrational and rational beliefs, and discussed unconditional self and other and life acceptance to clients (DiGiuseppe, et al., 2014). The participants were introduced to the binary model of emotions. Subsequently, the therapist explained the difference between hot and cold cognition and pointed out the importance of disputing irrational beliefs. The clients received the homework assignment to identify their irrational beliefs and unhealthy negative emotions and enter them onto a self-help form. The self-help form contains irrational beliefs, rational beliefs, unhealthy negative and healthy negative emotions based on the binary model of emotions. The form allows clients to fill in the empty blanks.

During the fourth and fifth sessions, the therapist assessed the clients' irrational beliefs and unhealthy negative emotions. The practitioner worked on identifying unhealthy emotions and irrational beliefs. Additionally, the therapist worked on clarifying the B–C connection with clients. Clients were asked to observe their thinking patterns regarding the difference between the A–C and B–C links. Clients received cards with true (rational beliefs) or false (irrational beliefs) statements as an in-session activity. The cards were matched with UNEs and HNEs. A summary of ten pages of Ellis and Harper's book: *A Guide to Rational Living* (1975) was given to the clients as a reading assignment. The therapists ensured that the clients read the pages in the following session. Clients were asked to provide feedback about what they gained from the book.

In the sixth, seventh, and eighth sessions, the therapist used didactic and Socratic questioning to dispute the clients' irrational beliefs. The therapist included logical, functional, semantic, and philosophical disputes. The experimental disputation was not applied in any session or in any homework assignments. During this time, the therapist disputed only irrational beliefs and *avoided* disputing inferences or negative automatic thoughts. Two homework assignments—repeating rational beliefs as self-statements and writing a letter called Mr. Rational (a letter containing rational beliefs) were given to clients.

During the ninth and tenth sessions, using a didactic approach and role-play (as well as reverse role-play). A rehearsal of rational beliefs was also applied. Unconditional acceptance beliefs were discussed with the clients, and some readings were given as homework. Self-disclosure techniques on the therapist's IBs and unhealthy negative emotions were provided when appropriate. A 'rational imaginary' homework was given with a re-explanation of the binary model of emotion. Clients were asked not to give any 'measurements' (such as rating emotions 1–10) to their emotions and use *alternative emotions* when doing rational imaginary practice.

During the eleventh and twelfth sessions, the therapist checked the homework assignments. Then the therapist summarized the sessions, asked clients what they knew about REBT and how it affects their life and their problems. At this point, therapist terminated the treatment.

### HCCT Group

The comparison treatment was a humanistic, client-centered approach (HCCT Group) based mainly on Rogers's work (see Watson & Schneider, 2016). The therapists met with the participants once a week for 12 weeks. Each therapy session lasted 50 min. A manual was created with clear guidelines from Rogers's (1959) book and Greenberg, Rice & Watson's manuscript (1994). This provided the therapist instructions on which activities to do and which to avoid.

Therapists were instructed not to apply any other specific therapeutic approaches, including CBT interventions. Clients were treated in all sessions using casual counseling approaches, which mostly required using basic counseling skills. The skills applied by the therapists were attending, basic empathy, careful listening, probing and questioning, reflecting, reframing, and summarizing. The therapists were not allowed to give clients any suggestions or opinions about their issues during the sessions. Detailed past experiences and a childhood history were explored from the first to fifth sessions. In all other sessions, clients were encouraged to talk about how their week went. They were encouraged to speak mainly about activating events (what happened in their week). A bibliotherapy assignment was given to the clients to match the similar assignment in the REBT condition. They were provided with Rogers' book *A Way of Being* (1995) in the sixth session. Clients were encouraged (but not assigned) to read any pages of the book. Subsequently, the therapists checked if the clients had read the pages and they gave feedback about what they had gained from the book.

In the seventh and eighth sessions, the therapist provided a homework assignment that involved keeping a diary on their experiences and emotions. Clients were encouraged to meet friends, visit their families, or do outdoor activities in the eighth and ninth sessions. Additionally, clients were encouraged to do regular sports and maintain standard eating patterns (at three consistent times each day). None of these assignments were required or scheduled for the clients. Clients were free to do or not do these assignments.

In the ninth to the twelfth session, the therapist summarized the sessions for about 8–10 min. Clients were encouraged to talk openly about their problems and asked to give feedback. The therapist kept using basic psychological counseling techniques such as reflection, summarizing, and giving empathy and encouragement. They suggested that the clients continue therapy after the sessions by providing the names and contact numbers of two psychologists'.

## Results

### Split-Plot ANOVA Results

Multivariate statistics are preferred over univariate statistics since the latter assume sphericity. The sphericity assumption requires that the variance of the universe difference scores for any two conditions, and the variance of the universe difference scores for any other two conditions, are the same (this is a generally violated proposition). This assumption is evaluated using the results of Mauchly's Tests of Sphericity. Multivariate statistics do not require the assumption of sphericity (Pallant, 2016).

Table 3 shows the Split-Plot ANOVA design, means, standard deviations, and  $n$  across the three time periods for the Irrational Beliefs, Depression, Anxiety, Life Satisfaction, Unhealthy and Healthy Negative Emotion Tests for REBT and HCCT Groups. Table 4 presents the Split Plots ANOVA results.

A significant interaction effect occurred between the therapy approach and time for the *Irrational Beliefs* measure (SGABS) with Wilks' Lambda=0.47,  $F(2-28)=16.13$ ,  $p=0.000$ , partial eta square=0.54. There is a large main effect for time, Wilks' Lambda=0.29,  $F(2-28)=34.63$ ,  $p=0.000$ , partial eta squared=0.71. As seen in Table 4, the Irrational Beliefs of both groups decreased over the three time periods. The main effect of treatment comparing the two practices was not significant  $F(1-29)=0.12$ ,  $p=0.733$ , partial eta squared=0.004. Because the interaction was significant, we did planned  $t$  tests between the SGABS scores for the two treatments at post-treatment and follow-up. There was no significant difference between the effects of the two therapy in approaches to Irrational Beliefs.

Considering the resulting *depression (BDI-TF)* scores of the participants, the interaction effect between the therapy approach and time is not significant, Wilks' Lambda=0.92,  $F(2-28)=1.21$ ,  $p=0.313$ , partial eta squared=0.08. The main effect

**Table 3** Average Scores for Irrational Beliefs, Depression, Anxiety, Life Satisfaction, Unhealthy and Healthy Negative Emotion Tests for the REBT and HCCT Groups over Three Time Periods

	REBT									HCCT								
	Pretest			Posttest			Follow-up			Pretest			Posttest			Follow-up		
	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD	n	M	SD
SGABS	16	84	16	16	72	19	16	67	16	15	77	16	15	76	16	15	75	14
BDI-TF	16	24	10	16	17	11	16	15	11	15	22	18	15	18	19	15	17	17
BAI-TF	16	40	11	16	32	13	16	31	12	15	31	14	15	32	10	15	32	8
OWB_ACT	16	20	4	16	13	4	16	13	4	15	16	5	15	15	5	15	15	5
OWB_REG	16	23	7	16	17	4	16	16	4	15	16	6	15	17	5	15	17	4
OWB_NTH	16	17	6	16	14	5	16	14	5	15	14	5	15	14	5	15	14	4
OWB_HOPE	16	20	9	16	19	8	16	20	8	15	19	7	15	17	6	15	16	6
UNE	16	26	5	16	22	7	16	21	6	15	23	5	15	21	5	15	21	5
HNE	16	29	6	16	25	5	16	25	5	15	27	5	15	24	5	15	24	5

**Table 4** Results of Split Plot ANOVA Including F values, Degrees of Freedom, and p values for the Main Effects of Treatment, Main Effects of Time (Repeated Measure), and Interaction of Treatment by Time for all Dependent Measures

	Main effect of treatment			Main effect of time			Time by treatment interaction		
	F values	df	p values	F values	df	p values	F values	df	p values
SGABS	.12	1–29	.733	34.63	2–28	.000	16.13	2–28	.000
BDI-TF	.00	1–29	.985	9.37	2–28	.001	1.21	2–28	.313
BAI-TF	.614	1–29	.440	1.88	2–28	.172	6.38	2–28	.005
OWB_ACT	.002	1–29	.965	6.50	2–28	.005	4.12	2–28	.027
OWB_REG	1.88	1–29	.181	8.85	2–28	.001	9.48	2–28	.001
OWB_NTH	.211	1–29	.650	2.85	2–28	.074	2.76	2–28	.081
OWB_HOPE	.784	1–29	.383	1.17	2–28	.324	2.77	2–28	.079
UNE	.388	1–29	.538	21.70	2–28	.000	7.61	2–28	.352
HNE	.380	1–29	.542	17	2–28	.000	1.05	2–28	.364

df Degrees of Freedom, p p values, SABS Short attitudes and belief scale, BDI-TF Beck depression inventory turkish version, BAI-TF Beck anxiety inventory—Turkish version, OWB\_ACT Ontological well-being—activation subscale, OWB\_REG Ontological well-being\_regret, OWB\_NTH Ontological well-being nothing subscale, OWN\_Hope Ontological well-being hope subscale, HNE Healthy negative emotions scale, UNE Unhealthy negative emotions scale

calculated for time is significant, Wilks' Lambda=0.60,  $F(2-28)=9.37$ ,  $p=0.001$ , partial eta squared=0.40. As seen in Table 4, there was a significant decrease in the depression scores of both groups across the three time periods. The main effect comparing the two treatments was not significant,  $F(1-29)=0.00$ ,  $p=0.985$ , partial eta squared=0.000. There was no significant difference between the effects of the two therapy approaches in depression scores.

When the anxiety (BAI-TF) scores of the groups were examined, the interaction effect between the therapy approach and time was significant, Wilks' Lambda=0.69,  $F(2-28)=1.21$ ,  $p=0.005$ , partial eta square=0.31. The main effect calculated for time was not significant, Wilks' Lambda=0.88,  $F(2-28)=1.88$ ,  $p=0.172$ , partial eta square=0.12. The main effect comparing the two groups was also not significant  $F(1-29)=0.614$ ,  $p=0.440$ , partial eta squared=0.02. There was no significant difference between the effects of the two therapy approaches on anxiety scores.

The interaction effect between the therapy approach and time is significant in *Ontological Well-Being—Activation Subscale scores*, Wilks' Lambda=0.77,  $F(2-28)=4.12$ ,  $p=0.027$ , partial eta squared=0.23. The main effect calculated for time was significant, Wilks' Lambda=0.68,  $F(2-28)=6.50$ ,  $p=0.005$ , partial eta squared=0.32. As seen in Table 4, the Activation Subscale scores of both groups significantly declined across the three time periods. The main effect comparing the two groups was not significant  $F(1-29)=0.002$ ,  $p=0.965$ , partial eta squared=0.00. There was no significant difference between the effect of the two therapy approaches on Activation Subscale scores.

On the *Ontological Well-Being—Nothingness Subscale scores*, the interaction effect between therapy approach and time is insignificant, Wilks' Lambda=0.84,

$F(2-28)=2.76$ ,  $p=0.081$ , partial eta squared=0.17. The main effect calculated for time was meaningless Wilks' Lambda=0.83,  $F(2-28)=2.85$ ,  $p=0.074$ , partial eta square=0.17. The main effect comparing the two groups was not significant  $F(1-29)=0.211$ ,  $p=0.650$ , partial eta squared=0.007. Nothing Subscale scores did not significantly differ between the effects of the two therapy approaches.

The interaction effect between the therapy approach and time in *Ontological Well-Being—Hope Subscale* scores is not significant, Wilks' Lambda=0.84,  $F(2-28)=2.78$ ,  $p=0.079$ , partial eta squared=0.17. The main effect calculated for time was not significant Wilks' Lambda=0.92,  $F(2-28)=1.17$ ,  $p=0.324$ , partial eta squared=0.08. The main effect comparing the two groups was not significant  $F(1-29)=0.784$ ,  $p=0.383$ , partial eta squared=0.026, Hope Subscale scores did not differ significantly between the effects of the two therapy approaches.

In *Unhealthy Negative Emotions Scale* scores, the interaction effect between therapy approach and time is not significant, Wilks' Lambda=0.65,  $F(2-28)=7.61$ ,  $p=0.352$ , partial eta squared=0.35. There is a large main effect for time, Wilks' Lambda=0.39,  $F(2-28)=21.71$ ,  $p=0.000$ , partial eta square=0.61. As seen in Table 4, Unhealthy Negative Emotions Scale scores of both groups showed a statistically significant decrease across the three time periods. The main effect comparing the two groups was not significant  $F(1-29)=0.388$ ,  $p=0.538$ , partial eta squared=0.013, there was no significant difference between the effects of the two therapy approaches on the Unhealthy Negative Emotions Scale scores.

In the *Healthy Negative Emotions Scale* scores, the interaction effect between the therapy approach and time is insignificant, Wilks' Lambda=0.93,  $F(2-28)=1.05$ ,  $p=0.364$ , partial eta squared=0.070. There was a large main effect for time, Wilks' Lambda=0.45,  $F(2-28)=16.99$ ,  $p<0.000$ , partial eta squared=0.55. As seen in Table 4, the Healthy Negative Emotions Scale scores of both groups showed a statistically significant decrease across the three time periods. The main effect comparing the two groups was not significant  $F(1-29)=0.380$ ,  $p=0.542$ , partial eta squared=0.013. There was no significant difference between the effects of the two therapy approaches on the Healthy Negative Emotions Scale scores.

### Post Hoc Analysis for REBT Group

Post hoc analysis with a Bonferroni adjustment revealed that depression (BDI-TF) was not significantly decreased from pre-test to post-test (7.4 (95% CI, 2.54 to 12.33,  $p = .006$ ) and from post-test to follow-up; however, it was statistically significantly decreased from pre-test to the 3 month follow-up (9.3 (95% CI, 3.57–15.05,  $p = .004$ ). Irrational beliefs decreased from pre-test to post-test (11.81 (95% CI, 5.08–18.53,  $p = .002$ ), and from post-test to follow-up (4.5 (95% CI, 1.85–7.15,  $p = .003$ ). Anxiety level (BAI-TF) was not significantly decreased from pre-test to post-test (7.9 (95% CI, .27–15.60,  $p = .043$ ), and from pre-test to follow-up (9.0 (95% CI, 1.76–16.24,  $p = .018$ ). Unhealthy negative emotions decreased significantly from pre-test to post-test (3.8 (95% CI, 2.14–5.61,  $p <.001$ ) and from post-test to follow-up (5.2 (95% CI, 3.45–6.91,  $p <.001$ ). Healthy negative emotions decreased significantly from pre-test to post-test (3.8 (95% CI,

2.30–5.34,  $p = .006$ ) and from pre–test to follow–up (4.3 (95% CI, 2.68–5.95,  $p < .000$ ). OWB–regret decreased significantly from pre–test to post–test (6.3 (95% CI, 3.28–9.34,  $p < .000$ ) and from post–test to follow–up (7.0 (95% CI, 3.88–10.12,  $p < .000$ ). OWB–activation decreased significantly from pre–test to post–test (7.2 (95% CI, 3.79–10.70,  $p < .000$ ) and from pre–test to follow–up (7.6 (95% CI, 4.19–11.17,  $p < .000$ ). OWB–hope did not decrease significantly at any of the three time points. OWB–nothingness decreased significantly from pre–test to post–test (2.9 (95% CI, 1.21–4.66,  $p = .002$ ). From pre–test to follow up (3.2 (95% CI, 1.31–5.19,  $p = .003$ ) there was no significant change from post–test to follow–up.

In the HCCT group, there was not a significant main effect difference across time on any of the depending variables.

### Level of Change (RCI and CCSI)

To determine the level of change and effect size for pre- and post-tests, Cohen's  $d$  was calculated. In all measures except OWB-Hope ( $d = 0.06$ ), Cohen's  $d$  effect sizes were in the medium to high range (ranged from 0.48 to 1.66). These results appear in Table 5.

Reliable Change Indices and clinically significant analysis were assigned into four categories provided following outcomes for those in the REBT group: (1) Clients who made No Change (NC), (2) Clients who Deteriorated (CD), (3) Clients who Improved (CI), and (4) Clients Clinically-Significantly Changed (CCSI).

After REBT treatment (Table 5), 6 participants improved (CI) based on their SGABS scores but did not change clinically (CCSI). No change occurred (NC) in 10 clients based on SGABS scores. Based on the BDI-TF, 7 participants showed improvement (CI) as well clinically changed (CCSI). 1 of them deteriorated (CD) and 8 of them showed NC. According to BAI-TF scores, 5 clients clinically changed (CCSI). 11 were NC condition after treatments. Based on OWB subscales, 9 clients showed CCSI in activation scores, and one client deteriorated (CD); 10 clients showed CCSI in regret scores, 5 clients showed CCSI in nothingness scores, and 11 of them remained the same (NC); only 1 client showed CCSI in hope scores, another client deteriorated, and 14 of them in NC condition. Based on unhealthy negative emotions, six clients showed CCSI, 10 of them in NC. Based on healthy negative emotions, four clients showed CCSI conditions, and 12 of them in NC.

Examining the Reliable Change Indices for those in the HCCT group (Table 6) based on the SGABS scores, no client improved (NC), 1 client deteriorated (CD). Only one of the participants in this treatment group showed a clinically significant change (CCSI) in BDI-TF scores; the others ( $n = 14$ ) remained in the same condition (NC). Based on the BAI-TF scores, one participant showed CCSI, and two clients deteriorated (CD). The other 12 participants did not show any improvement (NC). Based on the OWB subscales, four clients showed CD, seven clients showed CCSI in activation scores; 3 clients showed CD, 1 client showed CCSI, and 12 of them were in NC; based on OWB nothingness score, 1 client deteriorated, and 2 clients showed CCSI, the others ( $n = 12$ ) remained in NC; 2 clients in CCSI condition while others ( $n = 12$ ) were in NC according to hope scores. Based on UNE scores, 2 clients



**Table 5** Pre-treatment and Post-treatment Reliable Change Index Values and Clinically Significant Analysis for the REBT Experimental Group

Measures	n	Pretreatment Mean/SD	Post treatment Mean/SD	Pre-post effect size Cohen's d	SEM	RCI value	Clients no change	Clients deterior	Clients imprv	Clients clinically sign. change
SGABS	16	83.50/15.59	71.69/19.11	0.76	4.93	13.67	10	0	6	0
BDI-TF	16	24.37/9.70	16.93/10.81	0.77	2.78	7.70	8	1	7	7
BAI-T	16	40.18/11.27	32.25/13.24	0.70	3.57	9.89	11	0	5	5
OWB_ACT	16	20.25/4.09	13/4.47	1.66	1.30	3.60	6	1	9	9
OWB_REG	16	23.12/6.57	16.81/4.02	0.99	1.97	5.46	6	0	10	10
OWB_NTH	16	17.12/6.07	14.18/5.33	0.48	1.92	5.33	11	0	5	5
OWB_HOPE	16	19.75/8.91	19.25/8.41	0.06	2.82	7.81	14	1	1	1
UNE	16	26.00/4.79	22.13/6.74	0.81	1.51	4.20	10	0	6	6
HNE	16	28.81/5.81	25/5.13	0.66	1.84	5.09	12	0	4	4

*n* sample size, *RCI value* Reliable change index, *SEM* Standard error of measurement, *Clients deter.* Client deterioration, *Clients imprv.* Clients improvement, *Clients no change* Clients who not changed, *SD* Standard deviation

**Table 6** Pre-treatment and post-treatment reliable change index values and clinically significant analysis for the in the HCCT comparison Group

Measures	n	Pretreatment Mean/SD	Post treatment Mean/SD	Pre-post effect size (Cohen's d)	SEM	RCI value	Clients no change	Clients deter	Clients imprv	Clients clinically sign. change
SGABS	15	76.73/15.93	76.43/15.90	0.02	5.04	13.96	14	1	0	0
BDI-TF	15	21.60/17.59	17.87/18.73	0.21	5.56	15.42	14	0	1	1
BAI-TF	15	31.06/14.48	31.53/10.23	-0.03	4.58	12.70	12	2	1	1
OWB_ACT	15	15.73/4.99	15/4.97	0.15	1.58	4.38	4	4	7	7
OWB_REG	15	15.86/6.05	17.13/4.58	-0.21	1.92	5.31	11	3	1	1
OWB_NTH	15	14.33/4.87	14.13/5.05	0.04	1.54	4.28	12	1	2	2
OWB_HOPE	15	18.80/6.98	16.67/6.29	0.31	2.21	6.12	12	0	3	3
UNE	15	23.00/5.35	21.13/5.38	0.35	1.69	4.70	13	0	2	2
HNE	15	26.60/5.21	24.53/6.40	0.40	1.65	4.56	11	1	3	3

*n* Sample size, *RCI value* Reliable change index, *SEM* Standard error of measurement, *Clients deter*: Client deterioration, *Clients Imprv*: Clients improvement, *Clients no change* Clients who not changed, *SD* Standard deviation

in CCSI and others ( $n = 13$ ) NC; finally, HNE scores point out that three clients in CCSI, 1 client deteriorated, 11 of them showed NC.

Next, we present the Reliable Change Indices for the three-month follow-up scores for the REBT Group (Table 7). Some changes occurred in favor of the REBT group. Analysis of the SGABS scores indicated that 1 more client was improved. No change occurred in the CCSI. 1 client was clinically changed (CCSI) according to BDI-TF scores. 3 more clients are clinically changed based on UNE scores, while 3 more clients clinically changed based on HNE scores. Based on OWB-Hope and OWB-Reg follow-up scores, one of the CCSI clients is lessened. There was no change in BAI-TF and OWB-ACT scores.

## Discussion

The present study was designed to determine the effect of two psychotherapy approaches: Rational Emotive Behavior Therapy and Humanistic Client-Centered Therapy. The second aim of this study was to investigate the effects of classical REBT. Scientific research on psychotherapy contributes to the development of many therapeutic approaches. Among various methods of psychotherapy research, control trial studies represent the best methodological design for assessing therapeutic outcomes. REBT and HCCT are two of the oldest approaches in psychotherapy. Although extensive research has been carried out on REBT, few studies exist comparing the effectiveness of REBT and HCCT. Also, many variables used in this randomized control trial have not been addressed in previous studies. Therefore, we do not have sufficient scientific evidence to discuss the psychological variables with previous research. In this study, we compared two psychotherapy approaches to observe patients' anxiety, depression, activation, regret, hope, nothingness as an ontological well-being variable, healthy negative emotions, and unhealthy negative emotions.

A split-plot ANOVA comparative analysis demonstrated that there was no significant difference between the two therapies (main effect of treatment). This failure might have occurred because of the small sample size. However, further detailed analyses (calculating RCI and CSI values and post hoc analysis) show that REBT treatment demonstrated significant benefits in client's function over the three time points (pre, post, and three-month follow-up) on clients with depressive and GAD symptoms (main effect of time and time by treatment interaction) while HCCT therapy did not demonstrate equal success.

The Reliable Change Index/Clinically Significant Change (RCI/CSC) uses two psychometric criteria to evaluate (Jacobson & Truax, 1991) whether a change over time of an individual score is considered statistically significant (Guhn, Forer & Zumbo, 2014). RCI and CSC values for pre-, post-tests, and follow-up outcomes have shown that REBT yielded improvements of five to nine clients out of sixteen on irrational beliefs, depression, anxiety, regrets, activation, nothingness, unhealthy negative emotions, and healthy negative emotions. HCCT yielded improvements on between one to three clients out of 15 in the same variables. HCCT treatment improved hope on three clients while REBT treatment improved none. Considering

**Table 7** Pre-Treatment and Three- Months Follow-Up Reliable Change Index Values and Clinically Significant Change Analysis for the REBT Experimental Group

Measures	n	Pre-treatment Mean/SD	3 months follow up Mean/SD	Pre-treatment and follow-up effect size (Cohen's d)	SEM	RCI value	Clients no change	Clients deter	Clients imprv	Clients clinically sign. change
SGABS	16	83.50/15.59	67.18/15.53	0.97	4.90	13.57	9	0	7	0
BDI-TF	16	24.37/9.70	15.06/10.92	0.97	2.78	7.70	7	1	8	8
BAI-TF	16	40.18/11.27	31.18/11.82	0.81	3.68	10.21	11	0	5	5
OWB_ACT	16	20.25/4.09	12.56/4.19	1.66	1.30	3.60	5	1	9	9
OWB_REG	16	23.12/6.57	16.12/3.91	1.10	1.97	5.46	7	0	9	9
OWB_NTH	16	17.12/6.07	13.87/4.85	0.53	1.92	5.33	11	0	5	5
OWB_HOPE	16	19.75/8.91	19.50/8.00	0.03	2.82	7.81	15	1	0	0
UNE	16	26.00/4.79	20.81/5.89	1.08	1.51	4.20	7	0	9	9
HNE	16	28.81/5.81	24.5/5.06	0.74	1.84	5.09	9	0	7	7

*n* sample size, *RCI Value* Reliable change index, *SEM* Standard error of measurement, *Clients deter*: Client deterioration, *Clients Imprv*: Clients improvement, *Clients no change* Clients who not changed, *SD* Standard deviation

outpatients with GAD and mild depression in this study, many other studies in the literature indicate that anxiety and depression go together in many patients (Ballengier, 2000). Depression symptoms in eight clients lessened in the REBT group after treatment and the three-month follow-up, while only one client in the HCCT group was clinically changed. Anxiety symptoms in five clients were clinically changed in the REBT group, while in the HCCT group, one client changed clinically. However, based on total scores of participants, post hoc analysis shows that anxiety level did not change in either group. Very few clients deteriorated in both groups. Although none of the clients report that they were not satisfied with the treatments, especially in the REBT group, all scores were reduced after treatment (but without a significant reduction). According to RCI and CSC analysis, more than half of the clients in both groups did not show development. The long-term effect of both therapies may need to be investigated in future control trial studies.

As another variable in this research was ontological well-being (OWB), whose construct represents a theoretical framework that identifies the cognitive and affective components of the current conceptualization of subjective well-being (SWB). SWB is reframed and interpreted across the time in a person's life using OWB. By taking as its base the historical and philosophical resources of the affective and cognitive dimensions of subjective well-being, this construct defines subjective well-being as one's evaluation of life by considering both past and future perspectives in addition to the present (Şimşek, 2009). Based on the ontological well-being variables in the REBT group, activation clinically changed among nine clients, regret scores clinically changed among nine clients, nothingness clinically changed among five clients, and hope did not change. In the HCCT group, number of the clinically changed clients were seven (activation), one (regret), two (nothingness), and two (hope).

The findings from these studies suggest that REBT treatment was more successful than the HCCT group. This research confirms previous studies in the REBT literature that support the efficacy of REBT therapy. We concluded that HCCT was not effective in treating clients in such short-term periods (12 weeks). Although there are no previous studies comparing REBT and HCCT therapies with our dependent variables, some past research compared HCCT and CBT therapies (Yousefi, & Kiani, 2014). Because REBT is one of the original forms of CBT, our discussion will follow the CBT and HCCT comparison. Our results are consistent with the findings of Ward et al., (2000), Barkham et al., (1996), and Stiles et al., (2008) who showed that the comparative effectiveness of CBT in short term clinical interventions is more effective than HCCT in routine practice (Holmes et al., 2002). Our findings are inconsistent with the results of a meta-analysis (Elliott & Freire, 2008) that indicated that pure HCCT appeared to be statistically equivalent to CBT therapies in effectiveness. Additionally, according to Cuijpers's (2017) meta-analysis study on depression, all therapies are effective and there are no significant differences between treatments.

The second aim of this study was to investigate the effects of classical REBT. Although theoretically distinguishing REBT from CBT is almost impossible, there are some distinctive features in REBT interventions which dissimilar to CBT interventions. The practitioner was limited to using such classical REBT interventions.

For instance, first, aiming to change on hot cognitions (irrational beliefs) instead of cold cognitions (automatic thoughts). Second, using the binary emotions model to categorize emotions as UNE or HNE rather than using the unitary model that rates emotions along one continuum (reducing the intensity of emotions without categorizing). Third, the practitioner tried to dispute irrational beliefs by applying several disputation techniques such as logical, semantic, functional, and philosophic disputations and then replacing them with rational beliefs; so that working on automatic thoughts (e.g. evidence-based disputation) are not applied during sessions. Forth, educating the clients on unconditional acceptance. REBT makes a distinction between hot (e.g., irrational beliefs) cognitions and cold (e.g., automatic thoughts) cognitions (see David et al., 2005; Wessler, 1988). Irrational beliefs are hot cognitions (i.e., appraisals, judgments, and evaluations). By changing the general core irrational beliefs, one also changes the specific cold cognitions, such as automatic thoughts involved in specific psychological problems (Șoflău & David, 2017). According to some research, IBs interact with automatic thoughts in activating stressful events and further generate distress (Bond & Dryden, 1996, 2000; Szentagotai & Freeman, 2007). Such assumptions lead REBT to posit that the role of irrational beliefs in psychopathology is more critical than the role of automatic thoughts. Ellis indicated that four irrational beliefs are the closest components of cognition with psychological distress (Ellis & Dryden, 1997). Additionally, Ellis claimed, based on his clinical experiences, that irrational beliefs are not like automatic thoughts. They are often unconscious and represent automatic cognitions. Beck and Perkins (2001), Maultsby (1975), and Goldfried and Goldfried (1976) often employ empirical arguments to show clients how to surrender their misperceptions of reality. REBT takes the client's statements concerning potential facts and targets, changing their evaluation or imperative irrational beliefs about these potential facts. Some theorists, like Safran and Greenberg (1982), suggest that cold cognitions do not generate disturbing emotions. However, the model presented by REBT is that rational and irrational beliefs are core mechanisms involved in psychopathology (David et al., 2005) and they generate automatic thoughts. Findings on classical REBT in a meta-analysis (David, et al., 2018) cover 84 studies and show that REBT has medium and significant effect size. This study has similar results. Its outcomes are consistent with other experimental studies on REBT in depression (Manikanda, 2018; Thockchom & Suresh, 2020) and general anxiety disorder (Shenk et al., 2020; Noormohmadi et al., 2019).

Healthy and unhealthy negative emotions scores after treatments show similar results in favor of REBT over HCCT. While in the REBT group seven to nine clients were improved, in the HCCT group only two to three clients were improved. Our results showed that UNE decreased in the REBT group. While a unitary model suggests that human behavior disturbances can be explained only by the intensity of emotions (Russell & Carroll, 1999), a binary model suggests that functional and dysfunctional emotions are qualitatively different, based on rational or irrational beliefs (Ellis & DiGiuseppe, 1993; Hyland & Boduszek, 2012). Adherence to this binary model influences the therapy goals because its emotional goals will differ depending on which mode is used. Either the therapist and client aim to reduce the intensity of dysfunctional emotions or seek to achieve a qualitatively different alternative

emotion (e.g., concern instead of anxiety, regret instead of guilt) to replace negative, unhealthy emotions. In this study, emotional goals (C's) are identified based on binary model of emotions. It was not suggested to clients that they reduce the intensity of any dysfunctional emotions. Instead, by changing irrational beliefs to rational beliefs, they are suggested to switch their emotions 'qualitatively' to different emotions (from UNE to HNE). Our results indicated that healthy negative emotions decreased over time and these results were consistent with the findings of Popa and Predatu (2019). On the other hand, the results raise the question of whether the binary model of emotions and the emphasis placed on increasing HNE are signs of psychological well-being. One can assume based on REBT's binary theory that HNE should remain at the same level after therapy, or they should increase as the irrational beliefs decrease and the rational beliefs increase. However, neither of these results occurred in our study. The HNE scores of participants decreased after treatment. Some participants reported that when their level of healthy negative emotions decreased, they felt better. Perhaps REBT theorists and researchers need to do more investigation on the role of HNE in psychological well-being.

Ontological well-being, as one of the conceptualizations of the positive psychology approach, was another determiner in this study. REBT successfully supported ontological well-being in participants while HCCT failed to do. These results may point out that REBT can also be used in supporting positive psychology in clients. The result is consistent with findings that REBT not only alleviates psychological distress but also builds positive emotions (Oltean et al., 2019). However, an interesting result was that OWB-hope scores, a variable representing one of the positive aspects of mental health, did not improve by REBT. This result might indicate that REBT does not increase clients' positive feelings. Our results are inconsistent with the Sealid and Nordahl (2017) study, which found that the ABC Model effectively reduces anxiety symptoms while increasing feelings of hope. REBT's ABCDEF may extend to the model of to ABCDEFG (Artiran, 2019a; Dryden, 2019) in order to add some positive interventions (Oltean, et al., 2019; Sapançı & Bahtiyar, 2018; Whitfield, 2006). This study focuses on culturally specific, positive goals of a Turkish population (Artiran, 2019a) due to the practitioner's style of applying REBT, but more such relevant studies are needed to investigate the validity of such model. Another possibility is that adaptive variables such as hope or HNEs take longer to increase than UNE and psychopathological symptoms take to reduce. Future studies may provide more extended treatment and longer follow-up periods in order to answer these questions.

The generalisability of these results is subject to certain limitations. First, the REBT group received treatment from only one very experienced psychotherapist while the HCCT therapists had less experience in HCCT. Although the therapist strictly applied the manuals, the therapist's experience level in both groups might affect the study outcome. Second, the small sample size might have reduced the power of this study. Large randomised controlled trials could provide more definitive evidence on the therapeutic effectiveness of REBT and HCCT. Third, measuring irrational beliefs and unhealthy negative emotions was more directly related to REBT than HCCT. Therefore, the significant effect of irrational beliefs and UNE are most likely to be changed by REBT as these constructs are directly addressed in this

form of therapy than in HCCT. Thus, variables suitable for both therapy approaches (e.g. measuring emotional stability rather than measuring irrational beliefs) could be selected in future research when comparing these therapies. Forth, the assessment of side effects of psychotherapy should have been performed but was not included in the scope of this study. Sixth, some may assume that the HCCT appears more suitable for long-term interventions than short-term interventions. As is known, HCCT receives high ratings on empathy, unconditional positive regard, congruence, and support self-confidence while REBT appraises low in these areas; REBT rates high on cognitive and therapist-directed dimensions while HCCT rates low (Raskin & Rogers, 2000). The results could have changed if the length of treatment was extended. Therefore, comparing these two therapies for 12 weeks might have provided a bias against HCCT. Thus, it is difficult to make predictions about HCCT's effectiveness. Despite these limitations, the contribution of this study has been to confirm the efficacy of REBT.

#### Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

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