Psychiatry Research 281 (2019) 112541

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

A randomized controlled trial comparing Transdiagnostic Behavior Therapy (TBT) and behavioral activation in veterans with affective disorders

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ARTICLE INFO

Keywords:
Transdiagnostic behavior therapy
Behavioral activation
Anxiety disorders
Major depressive disorder
Posttraumatic stress disorder

ABSTRACT

This randomized controlled trial (RCT) compared the efficacy of Transdiagnostic Behavior Therapy (TBT) to Behavioral Activation Treatment for Depression (BATD) in veterans diagnosed with affective disorders. TBT is a transdiagnostic psychotherapy designed to address depressive, anxiety, and post-traumatic stress disorder (PTSD) symptoms. Preliminary findings have been promising; however, no RCT has been completed to date. 105 treatment-seeking veterans were recruited and completed diagnostic and self-report measures, and then randomized into TBT or BATD treatment conditions for 12 weekly psychotherapy sessions. Assessment measures were re-administered at immediate post-treatment and 6-month follow-up. Of the 93 participants initiating treatment, 50 participants completed the full treatment protocol (TBT $n = 29$; BATD $n = 21$). No differences were observed in treatment completion across groups. Participants demonstrated significant treatment improvements across all assessments, including measures of depression, anxiety (general, cognitive, and somatic), stress, PTSD symptoms, and transdiagnostic impairment. Group differences with small effect sizes were observed in most of the studied measures, favoring TBT compared to BATD. Together, the findings support the growing literature on the efficacy of transdiagnostic psychotherapies, compared to disorder-specific treatments (DSTs). Related to the outcome findings, the benefits for transdiagnostic protocols in terms of symptom coverage, dissemination, and access were discussed.

1. Introduction

Transdiagnostic treatments, or "those that apply the same underlying treatment principles across mental disorders, without tailoring the protocol to specific diagnoses" (McEvoy et al., 2009, p. 21), are based on the notion that various evidence-based psychotherapy protocols contain overlapping components designed to address common underlying symptoms found across groups of disorders (Barlow et al., 2004; Gros et al., 2016; Norton and Paulus, 2017). This is particularly true for the affective disorders and their disorder-specific cognitive behavioral therapy (CBT) protocols. The affective disorders include the depressive disorders, anxiety disorders, obsessive-compulsive and related disorders, and trauma- and stressor-related disorders in the Diagnostic and Statistical Manual for the Mental Disorders fifth edition (DSM-5) (American Psychiatric Association, 2013). The transdiagnostic approach aims to simplify treatment of the affective disorders by combining the shared/overlapping treatment components (e.g., behavioral therapeutic techniques) into a single treatment for the entire class of disorders. This combination of treatment components addresses the cross-cutting/overarching symptoms most related to increased symptom severity and functional impairment. If effective, transdiagnostic treatments also would greatly reduce the training burden on providers as only one protocol would be needed for the affective disorders, rather than separate protocols for each disorder. In addition, because transdiagnostic treatments are designed to address multiple disorders at once, they may be better suited to address the needs of patients with comorbid disorders and related symptom severity and impairments without requiring providers to successfully identify and implement multiple treatment protocols.

A number of transdiagnostic treatment protocols have been

This study is supported by Career Development Award Number CX000845 from the United States (U.S.) Department of Veteran Affairs Clinical Sciences R&D (CSRD) Service (PI: Gros). The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government. There are no conflicts of interest to disclose.

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https://doi.org/10.1016/j.psychres.2019.112541
Received 4 April 2019; Received in revised form 26 August 2019; Accepted 26 August 2019
Available online 29 August 2019
0165-1781/

developed for and studied in the affective disorders with preliminary support for their efficacy (Andersen et al., 2016; Newby et al., 2015; Norton and Paulus, 2017; Pearl and Norton, 2017). One protocol with particular promise for the affective disorders as well as for veteran samples is Transdiagnostic Behavior Therapy (TBT) (Gros, 2014). TBT is an individual protocol consisting of 12 weekly 60-minute sessions. Its primary components include: 1) psychoeducation, 2) transdiagnostic exposure practices, and 3) relapse prevention. TBT was developed to address symptoms of the affective disorders in veterans, with added coverage for and investigation in patients with major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) due to their high prevalence in veterans. In addition, TBT also was designed to be easy-to-learn, easy-to-disseminate, and easy-to-implement for providers as compared to the multi-treatment component approach found in alternative transdiagnostic protocols (Barlow et al., 2011). To date, several initial trials have been completed for TBT. First, two pilot trials of the 12-session TBT protocol were completed in veterans diagnosed with various affective disorders (*n*s = 15 and 29), each of which demonstrated significant treatment improvements with large effect sizes across all disorders and related symptoms studied. Second, a small dissemination effort for TBT was completed, with trained providers supplying significant treatment outcome data with large effect sizes for symptoms of depression and anxiety in patients with affective disorders ($n = 16$) (Gros et al., 2017). Third, an evaluation of a group version of TBT ($n = 34$) was compared to three different DST groups ($n = 66$) with large effect sizes observed in both groups (Gros et al., 2018). When the largest disorder group (social anxiety disorder; SOC) was investigated separately, participants with SOC receiving TBT ($n = 17$) demonstrated significantly larger improvements in symptoms of depression compared to participants with SOC receiving CBT for SOC ($n = 36$). In addition, larger effect sizes were observed for TBT than DSTs across all symptom scales.

Although the growing literature on the transdiagnostic psychotherapy protocols, including TBT, is very promising, additional research is needed on each protocol prior to advocating to replace disorder-specific approaches with transdiagnostic practices. This is particularly true in terms of the limited number of randomized controlled trials (RCTs) comparing transdiagnostic treatments to disorder-specific treatments (DSTs). Direct investigations are needed to test the hypothesized benefits of transdiagnostic approaches over traditional DSTs (Gros and Oglesby, 2019). With the exception of the improved treatment completion findings for Unified Protocol for Emotional Disorders (UP) (Barlow et al., 2017) and non-inferiority findings for Group Cognitive-Behavioral Therapy of Anxiety (GCBT) (Norton & Barrera, 2012), no other comparisons between transdiagnostic treatments and DSTs have been reported. For example, despite the potential benefits of TBT in terms of breadth of disorders targeted (Gros, 2014), potential ease of dissemination (Gros et al., 2017), and suggestion of superiority to DSTs (Gros et al., 2018), none of these stated benefits have been investigated via a RCT comparing TBT and DSTs (Gros and Oglesby, 2019).

The goal of the present study is to expand upon the comparison literature between transdiagnostic and DST protocols via a RCT of TBT and a specific DST, Behavioral Activation Treatment for Depression (BATD), in veterans diagnosed with any of the eight primary affective disorders. The large number of diagnoses, more than previous transdiagnostic RCTs, was selected based upon the hypothesized scope of TBT (Gros, 2014; 2015). BATD was selected as the comparison treatment for two primary reasons. First, there is demonstrated efficacy for BATD and general behavioral activation practices across the affective disorders (Gros & Haren, 2011; Hopko et al., 2003; Jakupcak et al., 2006; Lejuez et al., 2010). Second, due to the present study's recruitment of participants meeting diagnostic criteria for any of eight diagnoses, a matching study would require eight separate DSTs, representing a significant burden on project therapists as well as increased risk for treatment drift (Gros, 2015). Even in the largest RCT of a transdiagnostic treatment to date, DSTs were only matched on a select number of diagnoses (Barlow et al., 2017). Based on the previous studies for TBT (Gros, 2014; Gros et al., 2018), we hypothesized that TBT would demonstrate improved outcomes for symptoms of anxiety and depression, compared to BATD.

2. Method

2.1. Study design

A RCT design was used in the present study, with outcome assessor blind to study condition, to test the efficacy of TBT versus BATD control condition. Outcomes were assessed at baseline, immediate post-treatment, and 6-month follow-up after the completion of treatment. Twelve sessions of the randomly assigned study intervention were administered between the baseline and immediate post-treatment assessments. All procedures were approved by the local Veterans Affairs Medical Center (VAMC) Research and Development committee as well as the Institutional Review Board at the affiliated university.

2.2. Participants

Participants were 105 veterans requesting evidence-based psychotherapy for symptoms of depression and anxiety at primary care and mental health clinics within a large Southeastern VAMC. Study inclusion criteria involved: 1) competence to complete study consent and procedures, 2) DSM-5 diagnostic criteria for a principal diagnosis of an affective disorder including panic disorder and/or agoraphobia (PD/AG), PTSD, SOC, obsessive compulsive disorder, generalized anxiety disorder, specific phobia, MDD, or persistent depressive disorder, and 3) participant age of 18 years or older. Study exclusion criteria involved: 1) recent history ($\leq$ 2 months) of psychiatric hospitalization or a suicide attempt, 2) current diagnosis of substance use disorder, 3) acute, severe illness or medical condition that likely will require hospitalization and/or otherwise interfere with study procedures, 4) recent start of new psychiatric medication ($\leq$4 weeks), or 5) diagnosis of schizophrenia, psychotic symptoms, personality disorder, and/or bipolar disorder based on medical chart review. The demographic and diagnostic findings for the sample are presented in Table 1.

2.3. Study procedures

Participants were recruited from October 2014 to December 2017. Project staff advertised the study to local providers in the Primary Care Mental Health Integration and General Outpatient Mental Health clinics within the VAMC. Interested participants were referred to project staff and scheduled for an intake appointment to complete consent documents, evaluate study inclusion and exclusion criteria, and complete diagnostic and self-report measures. Eligible participants were randomly assigned (1:1) to one of the two study arms (TBT or BATD) using a permuted block randomization procedure. Randomization was stratified by four principal diagnostic groups (MDD, PTSD, PD/AG, or other affective disorder) and block size varied to minimize the likelihood of unmasking. The randomization assignment sequence was developed by the project statistician. Upon randomization, participants were assigned to a project therapist to complete 12 weekly sessions of psychotherapy. Participants repeated the diagnostic and self-report measures at immediate post-treatment (one week after completion of session 12) and at 6-months following the completion of treatment (six months after completion of session 12). The project assessor was blind to the study condition. Fig. 1 shows the Consolidated Standards of Reporting Trials (CONSORT) flow diagram of the participants through the study milestones (Moher et al., 2010).

Table 1
Descriptive statistics for baseline demographics and pre-intervention measures by condition.

	TBT Mean	*SD*	BATD Mean	*SD*	*F*
DASS stress	11.27	5.27	10.45	5.05	.56
DASS anxiety	8.19	5.95	6.57	4.59	2.09
DASS depression	10.30	6.10	10.54	4.71	.04
STICSA cognitive	25.62	7.58	23.56	5.95	2.06
STICSA somatic	21.05	19.18	19.18	7.20	1.91
PCL-5	40.29	17.55	36.17	16.00	1.34
IIRS	51.91	17.55	52.47	16.64	.02
Age	43.46	11.55	42.60	12.91	.12
Disorders	Percentage		Percentage		χ^2
Major depressive	41.3%		40.4%		.01
Panic	26.1%		29.8%		.16
Generalized anxiety	30.4%		29.8%		.29
Social anxiety	28.3%		23.4%		.76
Obsessive-Compulsive	8.7%		4.3%		.61
Post-Traumatic stress	32.6%		40.4%		.84
Sex					.84
Male	80.4%		72.3%		
Female	19.6%		27.7%		
Race					5.44
White	37.0%		57.4%		
Black	54.3%		34.0%		
Latino	4.3%		6.4%		
Native American	2.2%		2.1%		
Other	2.2%		0%		

Note. TBT = Transdiagnostic Behavior Therapy. BATD = Behavioral Activation Treatment for Depression. DASS = Depression, Anxiety, Stress Scale. STICSA = State Trait Inventory of Cognitive and Somatic Anxiety. PCL-5 = PTSD Checklist – 5. IIRS = Illness Intrusiveness Severity Scale. *SD* = Standard deviation.

2.4. Treatment conditions

Both treatment conditions were delivered in an individual psychotherapy format. All treatments were delivered by masters- or doctoral-level project therapists that received extensive training in TBT and BATD, including attending workshops, practice cases with supervision, and ongoing supervision on the treatment/protocols throughout the duration of the study. Project therapists were responsible for delivering both treatment conditions. Individual sessions were from 45–60 min in duration. A review of 20% of treatment session recordings, rated on a session-specific 5-point fidelity rating scales that were available/designed for each of the treatments by a clinician trained in both treatments, revealed that TBT (M = 4.8; SD = 0.5) and BATD (M = 4.6; SD = 0.6) were delivered with high fidelity.

2.4.1. Transdiagnostic behavior therapy

TBT was developed as a streamlined protocol to educate on, prepare for, and practice and master four different types of exposure techniques for negative emotions (situational/in-vivo, physical/interoceptive, thought/imaginal, and [positive] emotional/behavioral activation) to reduce transdiagnostic avoidance and lead to symptom remission. TBT has received initial support as an individual therapy (Gros, 2014; Gros et al., 2017), and was revised slightly to fit into a group format for an additional successful trial (Gros et al., 2018). Session topics include: psychoeducation on negative emotions and avoidance (session 1), assessment of motivation and treatment goals (session 2), psychoeducation on avoidance and exposure (session 3), getting started with exposures (session 4), exposure practice – part one (session 5), exposure practice – part two (session 6), maintenance and refinement of exposure practices (sessions 7–11), and review of treatment progress and relapse prevention strategies (session 12).

2.4.2. Behavioral activation treatment for depression

In general, BATD involves teaching patients to monitor their mood and daily activities with the goal of increasing pleasant, reinforcing activities and reducing unpleasant events (Hopko et al., 2003; Lejuez et al., 2010). BATD is a brief treatment, can be administered in either individual or group formats, and has demonstrated reliable effectiveness across a wide range of university, community, civilian and veteran clinical samples with depression. Behavioral activation practices also have been shown to be effective in the treatment of PTSD and other related affective disorders (Gros & Haren, 2011; Jakupcak et al., 2006). The BATD condition followed a published manual available in the literature (Lejuez et al., 2010) and was provided in a format structurally equivalent to TBT with the same session length (45–60-min), frequency of sessions (weekly), duration of treatment (12 sessions), and amount of homework assigned. Although there was some overlap between the BATD and TBT, the primary exposure component and multi-disorder focus of TBT is missing from BATD.

2.5. Measures

2.5.1. Anxiety disorder interview schedule 5 (ADIS-5)

The ADIS-5 is a well-established, semi-structured interview designed to assess a wide range of psychiatric disorders (Brown, 2014). The ADIS-5 assesses current and past diagnoses with DSM diagnostic criteria, severity scores, and lists of feared and avoided situations for the anxiety disorders. The ADIS-5 has demonstrated excellent inter-rater reliability and validity of affective disorder diagnoses. In the present study, 20% of interviews were scored by an independent rater. The findings demonstrated excellent inter-rater agreement for the targeted diagnoses of MDD (85.0%), PD/AG (100%), and PTSD (100%).

2.5.2. Depression anxiety stress scales, 21-Item version (DASS)

The DASS (Lovibond and Lovibond, 1995) is a 21-item measure with three subscales designed to assess dysphoric mood (depression subscale; DASS-D), symptoms of fear and autonomic arousal (anxiety subscale; DASS-A), and symptoms of tension and agitation (stress subscale; DASS-S). Support for the factor structure and convergent and discriminant validity of the DASS has been found in community samples (Lovibond and Lovibond, 1995). The DASS demonstrated good internal consistency across subscales and assessment points in the present study (αs > 0.80).

2.5.3. Illness intrusiveness ratings scale (IIRS)

The IIRS (Devin et al., 1983) is a 13-item transdiagnostic questionnaire that assesses the extent to which psychiatric symptomatology interferes with important domains of life, including health, diet, work, and several others. The IIRS has been shown to have strong psychometric properties in the previous literature in participants with physical and/or emotional health concerns (Devins et al., 2001; Devins, 2010). The IIRS demonstrated good internal consistency across all assessment points (αs > 0.88).

2.5.4. PTSD checklist 5 (PCL-5)

The PCL-5 is a 20-item self-report measure that assesses DSM-5 criteria PTSD symptoms experienced in the last month (Weathers et al., 2013). Previous versions of the PCL-5 have been shown to have excellent internal consistency and excellent test-retest reliability in veterans (Orsillo et al., 2001). The PCL-5 demonstrated excellent internal consistency across assessment points in the present study (αs > 0.92).

2.5.5. State-trait inventory for cognitive and somatic anxiety – trait version (STICSA)

The STICSA is a 21-item measure designed to assess trait cognitive and somatic anxiety (Gros et al., 2007; Ree et al., 2008). The cognitive and somatic subscales have been supported by factor analysis and both subscales have been found to have high internal consistency

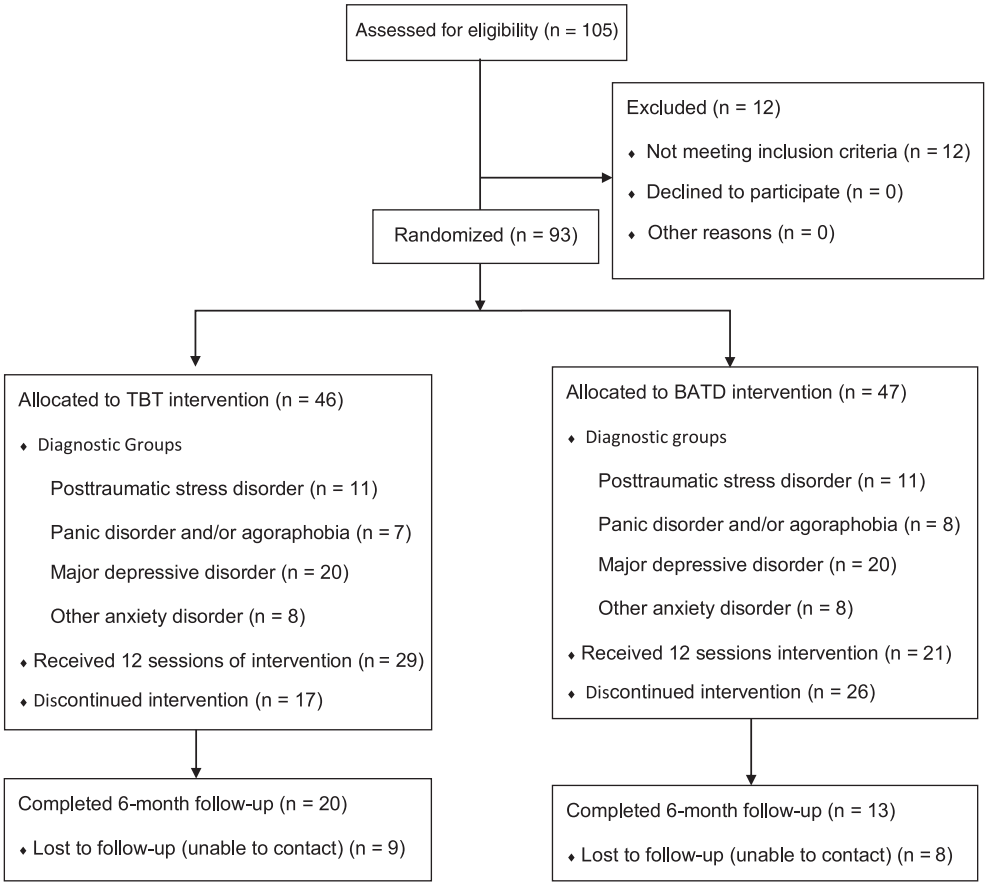

Fig. 1. Consolidated Standards of Reporting Trials (CONSORT) flow diagram showing participants flow.

(Gros et al., 2007). In addition, the STICSA subscales were found to remain stable over repeated administrations during several stress manipulations (Ree et al., 2008). The STICSA demonstrated good internal consistency across subscales and assessment points in the present study (αs > 0.84).

2.6. Data analytic plan

Baseline demographics and outcomes of interest were first compared across treatment condition. Following this, intent-to-treat (ITT) analysis was conducted, including all participants randomized to condition. A series of random intercept fixed slope multilevel models were conducted in Mplus version 8 (Muthén & Muthén, 1998–2017). The intercept was centered on post-intervention and time was entered as −1, 0, and 2. Time, condition, and time by condition interactions were included as well as relevant covariates (MDD diagnosis, number of diagnoses). All models were re-analyzed with time centered at the month 6 follow-up assessment to determine adjusted group differences. All outcomes are reported as unstandardized regression coefficients. Effect sizes (Cohen's *d*) were calculated as the cross-condition difference in change from pre- to post-intervention over the pooled change score standard deviation with small, medium, and large effects considered 0.2, 0.5, and 0.8, respectively.

3. Results

3.1. Sample and preliminary analysis

The sample was approximately evenly divided between the TBT (N = 46) and BATD (N = 47) groups (conditions). Table 1 contains descriptive statistics for baseline variables and demographic characteristics by group. There were no significant differences between groups at baseline. At baseline, four participants did not have data.

At post-intervention assessment, 43 participants did not have data (TBT n = 17, BATD n = 26). The rate of attrition was not significantly different across groups. Baseline STICSA somatic scores were elevated in those with data present at post-intervention, $F(1, 88) = 8.15$, $p = .01$, ($M = 21.76$, $SD = 6.96$) compared to STICSA somatic scores in those without data at post-intervention ($M = 18.01$, $SD = 5.07$). In addition, there was a significant age difference, $F(1, 91) = 15.05$, $p < .001$. Participants who had post-intervention data were older (M age = 47.26, SD = 12.19) than those who did not have post-intervention data (M age = 38.09, SD = 10.31). At the month 6 follow-up assessment, 60 participants did not have data (TBT n = 26, BATD n = 34). Again, the rate of attrition was not significantly different across groups. There was a significant age difference, $F(1, 91) = 18.38$, $p < .001$, such that participants who had month 6 follow-up data were older (M age = 49.73, SD = 12.05) than those who did not have month 6 follow-up data (M age = 39.33, SD = 10.69). No other significant differences were found. Mean scores for all outcome variables for those with data available at each measurement occasion are provided in Supplementary Appendix 1

3.2. Treatment effects

3.2.1. Depression, anxiety, and stress scale scores

The top panel of Table 2 contains intervention effects on the DASS scales. There was a significant effect of time on DASS-S scores ($B = -2.24$, $p = .01$; see Table 1). There were no group differences in DASS-S scores at post-intervention ($B = 0.003$, $p = 1.00$) or at month 6 follow-up ($B = 1.04$, $p = .50$). The between-person effect size ($d = 0.09$) indicated no meaningful differences in the magnitude of

Table 2
Comparison of TBT and behavioral activation in veterans with depressive/anxiety disorders.

	DASS Stress			DASS Anxiety			DASS Depression		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Group	.003	.92	1.00	−0.27	.85	.75	1.78	.93	.06
Time	−2.24	.88	.01	−2.43	.75	.001	−2.98	.90	.001
Group X Time	.51	.54	.35	.90	.45	.04	.93	.55	.09
MDD	−0.16	1.00	.87	−0.44	.99	.66	1.64	.98	.09
Diagnoses	.87	.56	.12	.71	.56	.21	1.38	.51	.01
Group (Month 6)	1.04	1.52	.50	1.56	1.17	.18	2.64	1.56	.02

	STICSA Cognitive			STICSA Somatic			PCL-5		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Group	−0.47	1.27	.71	−0.45	1.13	.69	−0.26	3.34	.94
Time	−3.77	1.42	.01	−2.55	.79	.001	−8.10	2.82	.004
Group X Time	.98	.83	.24	.85	.51	.10	2.10	1.60	.19
MDD	.95	1.38	.49	−0.05	1.31	.97	−0.36	3.61	.92
Diagnoses	1.22	.83	.14	.59	.68	.38	3.13	1.88	.10
Group (Month 6)	1.42	2.39	.55	1.20	1.57	.44	3.70	5.18	.48

	IIRS		
	B	*SE*	*p*
Group	3.45	3.31	.30
Time	−7.89	2.81	.01
Group X Time	.92	1.70	.59
MDD	4.58	3.63	.21
Diagnoses	2.73	2.01	.17
Group (Month 6)	4.87	5.07	.34

Note. DASS = Depression, Anxiety, Stress Scale. STICSA = State Trait Inventory of Cognitive and Somatic Anxiety. PCL = PTSD Checklist – 5. IIRS = Illness Intrusiveness Severity Scale. *SE* = Standard error.

DASS-S score reductions from pre- to post-intervention.

There was a significant effect of time on DASS-A scores ($B = -2.43$, $p = .001$). This effect was qualified by a significant group by time interaction effect ($B = 0.90$, $p = .04$), indicating a significantly greater decline in DASS-A in TBT compared to BATD. However, there were no significant group differences in DASS-A scores at post-intervention ($B = -0.27$, $p = .75$) or at month 6 follow-up ($B = 1.56$). The between-group effect size ($d = 0.17$) indicated a difference bordering on small in DASS-A score reductions from pre- to post-intervention, favoring TBT.

There was a significant effect of time on DASS-D scores ($B = -2.98$, $p = .001$). This effect was qualified by a marginally significant group by time interaction effect ($B = 0.93$, $p = .09$), indicating a marginally greater decline in DASS-D in TBT compared to BATD. There was a marginally significant group difference in DASS-D scores at post-intervention ($B = 1.78$, $p = .06$) and a significant group difference at month 6 follow-up ($B = 2.64$, $p = .02$). The between-group effect size ($d = 0.16$) indicated a difference bordering on small in DASS-D score reduction from pre- to post-intervention, favoring TBT.

3.2.2. State-trait inventory of cognitive and somatic anxiety trait scales

The middle panel of Table 2 contains intervention effects on the STICSA scales. There was a significant effect of time on STICSA cognitive scores ($B = -3.77$, $p = .01$). There were no group differences in scores at post-intervention ($B = -0.47$, $p = .71$) or at month 6 follow-up ($B = 1.42$, $p = .50$). The between-group effect size ($d = 0.13$) revealed no meaningful differences in the magnitude of STICSA cognitive score reductions from pre- to post-intervention.

There was a significant effect of time on STICSA somatic scores ($B = -2.55$, $p = .001$). This effect was qualified by a marginally significant group by time interaction effect ($B = 0.85$, $p = .10$), indicating a marginally greater decline from pre- to post-intervention STICSA somatic scores in TBT compared to BATD. There were no significant group differences at post-intervention ($B = -0.45$, $p = .70$) or at month 6 follow-up ($B = 1.20$, $p = .44$). The between-group effect size ($d = 0.14$) indicated no meaningful differences in the magnitude of STICSA somatic score reductions from pre- to post-intervention.

3.2.3. PTSD checklist-5

The middle panel of Table 2 contains intervention effects on the PCL-5. There was a significant effect of time on PCL-5 scores ($B = -8.10$, $p = .004$). There were no group differences in scores at post-intervention ($B = -0.26$, $p = .94$) or at month 6 follow-up ($B = 3.70$, $p = .48$). The between-group effect size ($d = 0.13$) indicated no meaningful differences in the magnitude of PCL-5 score reduction from pre- to post-intervention.

3.2.4. Illness intrusiveness severity scale

The bottom panel of Table 2 contains intervention effects on the IIRS. There was a significant effect of time on IIRS scores ($B = -7.89$, $p = .01$). There were no group differences in scores at post-intervention ($B = 3.45$, $p = .30$) or at month 6 follow-up ($B = 4.87$, $p = .34$). The between-group effect size ($d = 0.05$) indicated no meaningful differences in the magnitude of IIRS score reduction from pre- to post-intervention.

4. Discussion

The present study was a RCT comparing TBT with an active treatment comparison group, BATD. The study was completed in veterans diagnosed with affective disorders within a VAMC treatment setting. The findings demonstrated statistically significant treatment reductions in both TBT and BATD groups across measures of depression and anxiety as well as transdiagnostic impairment. Group differences with small effect sizes were observed in four of the seven measured scales, each of which favored TBT over BATD outcomes. There were no group differences in treatment completion. Together, these findings further support the efficacy of TBT in veterans with affective disorders.

The present findings contribute to the growing literature comparing transdiagnostic treatments to DSTs. While previous studies have

demonstrated improved outcomes of transdiagnostic interventions compared to waitlist control conditions (Farchione et al., 2012; Norton and Hope, 2005), no studies to date had demonstrated group differences between transdiagnostic treatments and DSTs. The present findings demonstrated group differences, but they were small and inconsistent across symptom measures. There may be several explanations for the findings that should be further studied in future investigations of TBT and DSTs. First, the potentially improved efficacy of TBT may be related to the selection of the comparison group of BATD. Although behavioral activation has been found to be effective across diagnoses (Gros & Haren, 2011; Hopko et al., 2003; Jakupcak et al., 2006; Lejuez et al., 2010), BATD is primarily designed for depression and may have been less effective in participants without MDD (~20% of sample did not have a diagnosis of MDD, although elevated depressive symptoms were reported at baseline across all participants). Second, the present findings may be related to the selection of the sample. In comparison to the other transdiagnostic studies (Barlow et al., 2017; Norton & Barrera, 2012), the present study was the first RCT investigation to recruit participants with principal diagnoses of MDD and PTSD as well as to recruit exclusively veteran participants. It is possible that these diagnoses and sample characteristics may be more sensitive to the effects of transdiagnostic interventions, related to non-specific symptoms of negative affectivity (Gros et al., 2010; Watson, 2009). And finally, the observed treatment differences may be due to TBT itself. This interpretation may be more difficult to explain as the other transdiagnostic treatments (GCBT and UP) contain the same primary treatment component as TBT (e.g., exposure therapy); however, it may be possible that the singular focus of TBT on exposure practices, compared to the multi-component focus of GCBT (cognitive therapy and exposure practices) and UP (5 active treatment components), contributes to a differential response related to the robustness of behavior therapy in the supporting literature (Longmore and Worrell, 2007; Bell et al., 2013). Additional investigation in future RCTs comparing TBT to DSTs, as well as comparing TBT to UP and GCBT, are needed to further understand the present findings and their potential explanations prior to concluding their significance to the transdiagnostic literature.

The high attrition rates in the present study also may have contributed to the findings. Although attrition did not differ across the two groups and ITT analyses were used, 46% of the sample did not complete the full 12-session protocol. Relatedly, due to the characteristics of the study completed in the VA setting (e.g., readily available subsidized/free treatments and minimal financial incentive for treatment completion), the present study may be more similar to routine clinical care settings than to typical RCTs. With that said, similar clinical care settings demonstrate an average attrition rate of 42% (Goetter et al., 2015). Another study characteristic that may have adversely influenced attrition was the 12-session requirement for treatment completion, rather than defining completion based on treatment goal attainment as used in other TBT studies with higher completion rates (Gros, 2014). Future investigations of TBT, or in VAMC settings in general, should consider improving the study incentives to be more in line with community research studies. To potentially improve attrition in clinical settings, delivery of TBT may benefit from more flexible delivery of the frequency and total duration of treatment, influenced by patient symptomatology, availability, and treatment progress.

Whether the transdiagnostic literature ultimately finds reliable support for superiority or equivalence to the DSTs, either finding has significant clinical implications to the treatment of the affective disorders. More specifically, if equal in outcomes to DSTs, transdiagnostic protocols offer significant advantages in terms of training and implementing a single protocol, as compared to the set of DSTs required to treatment the same number of disorders (e.g., TBT vs. eight DSTs). Over the years, a number of large-scale dissemination efforts have been initiated for DSTs (McHugh and Barlow, 2010; Ruzek et al., 2012). For example, the Department of Veterans Affairs (DVA) was responsible for training over 4600 providers over a 3-year period (Ruzek et al., 2012). The treatments that were most disseminated include Cognitive Processing Therapy for PTSD, Prolonged Exposure for PTSD, and CBT for MDD. Although these trainings focused on the most prevalent psychiatric disorders treated in the DVA (Magruder et al., 2005), the dissemination of these DSTs ultimately failed to address several common disorders in the DVA, such as PD/AG (Gros et al., 2011) and generalized anxiety disorder (Milanak et al., 2013). In addition, providers were required to attend multiple trainings to learn to treat multiple disorders, each of which with its own significant time commitment and expense (Gros et al., 2016). If comparable to DSTs, a shift to transdiagnostic protocols would significantly reduce the training burden and expenses on providers as only one protocol would be needed. Relatedly, preliminary data on dissemination efforts for transdiagnostic treatments have been very promising across providers of varying backgrounds (e.g., doctoral students, social workers, masters-level clinicians, and psychologists), and with providers reporting high confidence in and satisfaction with the effectiveness of the transdiagnostic approach to treatment (Gros et al., 2017). Given the success with similar behavior therapeutic practices (Cully et al., 2010), expansion of dissemination efforts of transdiagnostic protocols to other healthcare providers (e.g., nursing staff in primary care) also could be quite significant in terms of access to evidence-based psychotherapies.

Despite these promising RCT findings for TBT as well as supporting evidence for the other transdiagnostic protocols for the affective disorders (Barlow, 2017; Farchione et al., 2012; Norton & Barrera, 2012), additional research is needed on each of the available protocols prior to recommending wide spread dissemination/implementation. Thus far, the available RCTs have been underpowered to investigate disorder-specific effects for the transdiagnostic protocols. Although, recruiting sufficient participants per diagnosis may be prohibitive (Gros, 2015), future investigations should consider limiting recruitment to one or two disorders to more specifically allocate resources and allow for more sensitive/better powered analyses (e.g., TBT vs. Cognitive Processing Therapy in patients with PTSD). Direct comparisons between the transdiagnostic protocols also would improve the state of the literature to better inform selection by interested clinicians; however, such studies may be limited due to the relatively unique characteristics of each of the protocols (e.g., scope of affective disorder targeted, individual or group treatment modality, duration of treatment). And finally, larger dissemination studies should be initiated to more fully determine provider satisfaction and success in implementing the transdiagnostic protocols.

The present study included several limitations to be addressed in future research. The sample was limited to an United States veteran population with veteran-specific characteristics (e.g., mostly male, higher prevalence of PTSD, English-speaking) and may generalize less well to civilian samples or predominantly female samples. As discussed earlier, the study was underpowered to investigate disorder-specific outcomes and group differences. The study also was limited to a single DST comparison group, rather than providing separate DSTs for each of the eight disorders targeted. Related, the majority of the measures were focused on more generalized psychopathology (e.g., anxiety, depression, and impairment), rather than disorder-specific symptomatology (e.g., specific measures for PD/AG, SOC, and MDD).

Together, the present study provides additional support for transdiagnostic psychotherapy as compared to DSTs in a RCT. These findings also were completed in a sample that included participants with principal diagnoses of MDD and PTSD. Whether interpreted for superiority (although small and inconsistent across measures) or equivalence to the DSTs, the findings are significant due to the benefits associated with transdiagnostic treatments (e.g., one protocol to treat multiple disorders).

Supplementary materials

Supplementary material associated with this article can be found, in

the online version, at doi:10.1016/j.psychres.2019.112541.

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