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BRIEF REPORT

A Pilot Study of Tailored Cognitive–Behavioral Resilience Training for Trauma Survivors With Subthreshold Distress

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This pilot study evaluated the feasibility, acceptability, and preliminary effectiveness of tailored cognitive–behavioral resilience training (TCBRT) for trauma-exposed individuals with a variety of subsyndromal psychological symptoms. TCBRT is a brief, flexible intervention that allows individuals to select the areas they wish to target using common cognitive–behavioral change principles. There were 14 individuals (78.6% female) who were recruited from a major medical center and enrolled in the 5-session intervention. There were 12 (85.7%) who completed all TCBRT sessions, and 2 (14.3%) who dropped out after 3 sessions. All participants reported that they received benefit from, were engaged in, and were satisfied with the intervention. Of the 12 with postintervention data, 5 of the participants demonstrated reliable increases in resilience and 6 demonstrated reliable decreases in anxiety. These improvements appeared to be maintained at 2-month follow-up; of the 11 participants with follow-up data, 5 demonstrated reliable increases in resilience and 6 demonstrated reliable decreases in anxiety. Our findings suggested that TCRBT was acceptable to trauma-exposed individuals with varying types of subthreshold distress.

Approximately 60% of men and 50% of women experience a traumatic event in their lifetime (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). To date, intervention efforts have largely focused on the estimated 7.8% of individuals (Kessler et al., 1995) who experience posttraumatic stress disorder (PTSD) in their lifetime. Evidence, however, suggests that subthreshold or partial PTSD is more prevalent than full PTSD (e.g., 9.7% subthreshold PTSD vs. 8.2% full PTSD in disaster workers after the September 11, 2001 terrorist attacks; Cukor, Wyka, Jayasinghe, & Difede, 2010) and causes significant impairment and distress (Cukor et al., 2010). For example, subthreshold PTSD has been associated with increased aggression (Jakupcak et al., 2007), alcohol use (Adams, Bascarino, & Galea, 2006), health care utilization, and work absences (Breslau, Lucia, & Davis, 2004). Evidence also suggests that individuals with a history of trauma who experience psychological distress are more likely to be exposed to future trauma (Orcutt, Erickson, & Wolfe, 2002). Thus, traumatized individuals with persistent subthreshold distress represent an important group to target with psychological interventions to improve current functioning and build resilience to future traumatic stress.

Trauma can lead to an array of mental health problems that are influenced by shared etiological factors (e.g., low self-efficacy, poor social support), maintained by common maladaptive strategies (e.g., negative cognitive biases, avoidance behaviors) and lead to similar concomitant problems (e.g., sleep disturbance, worry, social isolation). Cognitive–behavioral change principles (e.g., exposure, cognitive restructuring, behavioral activation, problem solving; O'Donohue & Fisher, 2012) have been found to effectively treat a host of mental disorders (e.g., Chambless & Ollendick, 2001), but are seldom applied to individuals with subsyndromal symptoms. We developed tailored cognitive behavioral resilience training (TCBRT), a brief, flexible intervention that allows individuals to select the areas

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[Corrections added after publication on 13 February 2018: on page 269, 2nd column, 2nd paragraph, the 2nd sentence was removed. On page 270, Results section, the first sentence was removed. On page 271, the title of Table 4, the word "Number" was changed to "Percent" and the data in Table 4 was corrected. On page 271, column 1, line 17, the sentence was changed to, "Participants' index traumas, years since trauma, and number of TCBRT sessions attended are reported in Table 3."]

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they wish to target using common cognitive–behavioral change principles. The goal of this study was to pilot test TCBRT to examine the feasibility of recruiting traumatized individuals with a variety of subthreshold symptoms and the acceptability of using a brief flexible intervention approach with these individuals. As a secondary analysis, we explored whether TCBRT enhanced resilience, improved quality of life, and decreased symptoms.

Method

Participants and Procedure

Participants were eligible if they were 18 years of age or older, had a history of a Criterion A1 trauma based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV;* American Psychiatric Association, 1994) PTSD diagnosis, and had subthreshold symptoms of PTSD, major depressive disorder (MDD), dysthymic disorder, panic disorder, agoraphobia, alcohol abuse/dependence, or substance use/dependence (i.e., disorders most closely related to trauma; Perkonigg, Kessler, Storz, & Wittchen, 2000) as indicated by a score of 1, 2, or 3 on the Anxiety Disorders Interview Schedule for DSM-IV (ADIS; Brown, DiNardo, & Barlow, 1994). Participants were excluded if they (a) experienced a trauma within the last month; (b) were diagnosed with lifetime psychotic or bipolar disorder; (c) scored 4 or higher on the ADIS for current PTSD, MDD, dysthymic disorder, panic disorder, agoraphobia, alcohol abuse / dependence, or substance abuse / dependence; (d) initiated concurrent psychotherapy in the last 3 months or ongoing psychotherapy directed toward the treatment of trauma-related psychopathology; (e) reported an unstable dose of psychotropic medications (change within 6 weeks); or (f) reported significant suicidal ideation or enacted suicidal behaviors within 6 months.

There were 99 individuals who completed the initial phone screen; 30 were invited to an in-person eligibility session, and 27 completed the eligibility session. There were 13 who were excluded because they met criteria for PTSD ($n = 8$), had an incomplete interview ($n = 2$), had current legal action ($n = 1$), or no significant symptomatology ($n = 1$). This left 11 women and three men who met the inclusion criteria for a total sample of $N = 14$. Participants identified as Caucasian ($n = 6$) and African American ($n = 8$); they ranged in age from 37 to 65 years ($M = 49.93$, $SD = 9.16$). Total household income varied as follows: no income–$19,999 ($n = 7$), $20,000–$49,999 ($n = 3$), and $80,000 or more ($n = 4$). Most participants ($n = 13$) reported multiple traumas.

Participants were recruited from an urban hospital through outpatient clinics and Internet-based advertisements. Interested individuals completed a phone screen to ensure basic eligibility criteria were met. Participants then attended an in-person eligibility assessment during which they provided informed consent. Eligible participants were enrolled in the TCBRT intervention, which was administered by the first author (A.K.Z.), a licensed clinical psychologist. Self-report measures were collected at preintervention, each intervention session, postintervention, and 2-month follow-up. Follow-up assessments were sent by e-mail or mail to all 14 who enrolled in the intervention, regardless of the number of sessions completed. Participants were offered monetary compensation for assessments and travel (up to $90). This study was approved by the Rush University Medical Center Institutional Review Board.

TCBRT was developed by the first author (A.K.Z.) based on stress inoculation training and resilience-building strategies (Meichenbaum, 2007, 2012). The intervention included five weekly 90-minute sessions (manual available upon request). In Session 1, participants identified the top three areas in which they wanted to build resilience (action items) and also identified existing strengths with the goal of leveraging these strengths to help build new skills. Sessions 2–4 addressed participants' selected action items using psychoeducation regarding maladaptive patterns, in-session practice of new skills based on cognitive–behavioral change principles, and action plan development for practicing skills during the week. Action plans were designed to teach participants effective goal setting and attainment strategies including an emphasis on setting short-term goals, identifying potential barriers, and developing strategies to overcome barriers. In Session 5, the therapist reviewed progress and barriers to participants' action plans and encouraged participants to continue using action plans after the intervention.

Measures

Participants reported demographics, medical history, trauma history, and past psychological treatment. The ADIS (Brown et al., 1994) assessed current psychopathology most closely associated with trauma as well as lifetime psychosis and mania.

Participants were asked how much they expected to benefit from the program at preintervention, how satisfied they were with the program at postintervention, and how much they think they benefited from the program at postintervention and follow-up using a 5-point Likert scale (1 = *not at all*, 5 = *extremely*). Participants rated the extent to which they completed and benefited from homework assignments from Sessions 2–5 (reflecting homework assigned at Sessions 1–4). Mean scores were calculated for each individual based on sessions attended to reflect overall homework completion and benefit. At follow-up, participants reported to what extent they continued to use the skills they learned during the intervention on a 5-point Likert scale (1 = *never* to 5 = *all of the time*).

Psychological resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), a 25-item measure that ranges from 0 to 100. Quality of life was measured using the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison, & Blumenthal 1993), a 16-item measure that ranges from 16 to 80. Anxiety was assessed using the State-Trait Anxiety Inventory–State Scale (STAI-S; Spielberger, Gorsuch, Lushene, Vagg, &

Table 1
Baseline Mean and Standard Deviation of Measures of Resilience, Quality of Life, and Distress

Variable	*M*	*SD*
CD-RISC	69.07	13.31
Q-LES-Q	49.86	11.89
STAI-S	49.13	12.49
PHQ-9	7.28	4.03
PSS-SR	17.15	5.68

Note. $N = 14$. CD-RISC = Connor Davidson Resilience Scale; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; STAI-S = State-Trait Anxiety Inventory–State scale; PHQ-9 = Patient Health Questionnaire–9; PSS-SR = PTSD Symptom Scale–self-report.

Jacobs, 1983), a 20-item measure that ranges from 20 to 80. Depression was measured with the Patient Health Questionnaire–9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001), a nine-item measure that ranges from 0 to 27. Posttraumatic stress was assessed using the PTSD Symptom Scale–Self-Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993), a 17-item measure that ranges from 0 to 51. Table 1 reports the preintervention means and standard deviations for these measures.

Data Analysis

For measures of resilience and distress, Reliable Change Index (RCI; Jacobson & Traux, 1991) scores were calculated for each participant from pre- to postintervention and preintervention to follow-up using the equation $RCI = \frac{x_2 - x_1}{SE_{diff}}$ where x_1 is a participant's preintervention score and x_2 is that same participant's postintervention or follow-up score, and SE_{diff} is the standard error of difference between the two test scores. As suggested by Jacobson and Traux (1991), RCI values > 1.96 indicate a significant change ($p < .05$). RCI scores were only calculated for participants with postintervention or follow-up data. Sensitivity analyses using nonparametric tests did not find any differences between those with and without missing data.

Table 2
Benefit and Satisfaction of Intervention at Various Time Points

Variable	*n*	*M*	*SD*	MIN	MAX
Expected benefit at baseline	14	3.86	0.77	3	5
Perceived benefit at postintervention	11	4.36	0.81	3	5
Satisfaction at postintervention	12	4.67	0.65	3	5
Perceived benefit at 2-month follow-up	11	4.09	0.94	2	5

Note. Participants responded to all items using the following responses choices: 1 (*not at all*), 2 (*a little bit*), 3 (*moderately*), 4 (*quite a bit*), 5 (*extremely*). MIN = minimum; MAX = maximum.

Results

There were 12 participants who completed all TCBRT sessions; two participants completed three sessions. There were 11 participants who completed the follow-up questionnaire including 10 participants who completed five TCBRT sessions and one participant who completed three sessions. Participants chose to work on reducing negative thinking habits ($n = 7$), improving physical health ($n = 6$), increasing positive / meaningful activities ($n = 6$), improving interpersonal relationships ($n = 6$), managing negative emotions with adaptive coping ($n = 5$), decreasing avoidance ($n = 5$), enhancing forgiveness ($n = 4$),

Table 3
Reliable Change Index (RCI) Scores From Preintervention to Postintervention and Follow-Up by Participant

					Resilience		Quality of life		Anxiety		PTSD		Depression	
ID	Sex	Index Trauma	Years elapsed	Sessions	Post	FU	Post	FU	Post	FU	Post	FU	Post	FU
1	M	Combat	11	5	2.17[a]	−0.43	3.26[a]	1.71	−1.93	−1.48	−1.76	2.59[b]	−1.91	−3.09[a]
2	M	Assault	4	5	−3.48[b]	−3.02[b]	0.65	−2.06[b]	−1.66	4.88[b]	0.00	0.00	−1.91	
3	F	Assault	17	5	6.97[a]	2.42[a]	−0.70	−0.69	−1.17	−2.12[a]	−1.12	−2.21[a]	2.55[b]	−1.86
4	F	Assault	26	5	−1.31	0.30	2.28[a]	0.00	−2.90[a]	1.23	−1.68	3.10[b]	−2.55[a]	1.24
5	F	Assault	23	5	−0.45		2.60[a]		−2.25[a]		1.68		2.55[b]	
6	F	DOO	32	3		1.81		2.40[a]		−4.43[a]		−5.31[a]		−4.95[a]
7	F	DOO	2	5	3.05[a]	2.12[a]	1.30	1.03	−2.25[a]	−2.95[a]	−1.68	−2.21[a]	0.64	0.00
8	F	DOO	8	5	−0.44	3.02[a]	3.91[a]	5.84[a]	−2.58[a]	−2.95[a]	−3.36[a]	−3.98[a]	−7.00[a]	−7.42[a]
9	F	MVA	9	3										
10	M	MVA	7	5	0.00	−5.75[b]	0.65	2.06[a]	−7.08[a]	−0.25	−5.05[a]	−5.31[a]	−3.10[a]	0.08
11	F	Illness	3	5	0.00	0.30	−1.63	−0.69	0.97	0.49	−1.12	−0.88	4.46[b]	3.09[b]
12	F	Assault	42	5	−2.61[b]		−7.49[b]		6.11[b]		4.48[b]		4.46[b]	
13	F	Assault	25	5	10.45[a]	6.35[a]	−0.33	−2.40[b]	−1.61	−3.20[a]	0.21	−3.54[a]	−1.91	0.62
14	F	DOO	6	5	3.05[a]	3.93[a]	6.51[a]	8.58[a]	−7.41[a]	−7.87[a]	−9.53[a]	−7.52[a]	−2.47[a]	−3.09[a]

Note. Subject 9 was excluded from RCI analyses because no postintervention or follow-up data was available. Post = RCI from pre- to postintervention; FU = RCI from preintervention to follow-up; Assault = physical or sexual assault; MVA = motor vehicle accident; DOO = death of other (i.e., violent or accidental death of a loved one); Illness = life-threatening illness. Positive RCI values indicate scores that increased over time; negative RCI values indicate scores that decreased over time.
[a]Significantly improved (RCI > 1.96 for resilience and quality of life; RCI < -1.96 for measures of distress).
[b]Significantly worsened (RCI < -1.96 for resilience and quality of life; RCI > 1.96 for measures of distress).

Table 4
Percent Showing Reliable Change Improved or Worsened on All Outcomes

	Resilience		Quality of life		Anxiety		PTSD		Depression	
Variable	Post	FU	Post	FU	Post	FU	Post	FU	Post	FU
% improved	41.7	45.5	41.7	36.4	50.0	54.5	25.0	63.6	33.3	40.0
% worsened	16.7	18.2	8.3	18.2	8.3	9.1	8.3	18.2	33.3	10.0

Note. $n = 12$ for Post; $n = 11$ for FU. PTSD = posttraumatic stress disorder; Post = postintervention; FU = follow-up; RCI = reliable change index.

and improving problem solving ($n = 1$) in terms of the chosen focus.

See Table 2 for participant ratings of intervention expectations and satisfaction. All participants expected at least moderate benefit from the intervention at preintervention. At postintervention, participants reported that on average, they experienced *quite a bit* of benefit ($M = 4.36$, $SD = 0.81$) and were highly satisfied with the program ($M = 4.67$, $SD = 0.65$). Participants reported that they continued to benefit *quite a bit* from the program on average at follow-up ($M = 4.09$, $SD = 0.94$).

Participants reported that on average, they completed homework a *moderate amount* to *quite a bit* ($M = 3.70$, $SD = 0.89$) and benefited from homework *a moderate amount* to *quite a bit* ($M = 3.61$, $SD = 0.88$). At 2-month follow-up, they reported average continued use of skills *occasionally* to *frequently* ($M = 3.82$, $SD = 0.75$, observed range = 3 to 5, $n = 11$).

Participant's index traumas, years since trauma, and number of TCBRT sessions attended are reported in Table 3. Tables 3 and 4 report participant RCIs from pre- to post-intervention and preintervention to follow-up. Measures of psychological resilience, anxiety, and quality of life demonstrated the most robust results with 41.7–50.0% of participants demonstrating reliable improvement at postintervention and 36.4–54.5% demonstrating reliable improvement at follow-up. For depression and PTSD symptoms, only 25.0–33.3% of participants demonstrated reliable improvement at postintervention, but this increased to 40.0–63.6% of participants by follow-up. A few participants evidenced reliable worsening during the intervention; these effects were largely accounted for by two participants (Participants 2 and 12).

Discussion

Our findings suggested that TCBRT was feasible and acceptable to participants with a history of various types of trauma and subthreshold psychological distress. Retention during the intervention was high, and participants reported high levels of satisfaction and benefit at postintervention and follow-up. Participants were able to engage in the process of selecting their own personalized intervention targets and endorsed high intervention engagement, including the continued use of skills at follow-up.

Our findings also suggested that TCRBT may help to enhance resilience, improve quality of life, and reduce psychological distress in traumatized individuals with subthreshold distress, though the evidence for this was less strong. Given the brief and flexible nature of the intervention as well as the selection of individuals with low levels and varying types of symptomology, it is notable that the majority of participants demonstrated improvements in resilience, quality of life, or anxiety at postintervention (9 of 12 participants, 75.0%) and follow-up (7 of 11 participants, 63.6%). Although a few participants demonstrated reliable worsening on one of these three outcomes at postintervention (2 of 12 participants; 16.7%) and follow-up (3 of 11 participants; 27.3%), only two participants at postintervention (16.7%) and one participant at follow-up (9.1%) demonstrated reliable worsening on one outcome without reliable improvement on a different outcome.

The high degree of variability in terms of trauma type, symptom presentation, and intervention targets introduces many variables that may explain the study findings. Although this complicates potential interpretations, the sample heterogeneity more closely reflects the population of individuals suffering from posttrauma distress who would benefit from resilience interventions; our findings suggested that a flexible intervention can be used and may even be preferable in such a heterogeneous group. Several additional limitations should be considered when interpreting our results. Given the open pilot design, it is unclear whether changes in resilience and distress measures can be attributed to the TCBRT intervention. Participants' improvements may reflect naturalistic recovery from trauma-related symptoms; however, this is unlikely given that the time since the index trauma ranged from 2 to 42 years. It is also unclear if selective dropout influenced follow-up data; however, dropout was minimal, suggesting that this does not fully account for observed results. Controlled research is needed to test the efficacy of TCBRT and the impact of a flexible versus prescriptive intervention approach on acceptability, engagement, and efficacy in different traumatized populations.

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