

**Feasibility of Cognitive Behavioral Therapy Exercises for Addressing PTSD Symptoms in Inpatient Settings: A Proof-of-Concept Study**

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**Clinical Impact Statement:** Based on our preliminary and tentative results, short-term inpatient psychiatric units constrained by lack of brief evidence-based psychotherapies for posttraumatic stress disorder (PTSD) can safely offer this series of carefully arranged psychoeducation and exercises amassed into a single 90-120 minute session to potentially initiate understanding, acceptance, and reduction of PTSD symptoms, without fear of harm or symptom exacerbation, and regardless of comorbid psychosis and substance use disorders.

### Abstract

**Objective:** Short-term inpatient psychiatric settings offer a unique opportunity to interrupt a pernicious cycle. Posttraumatic stress disorder (PTSD) is known to contribute to costly healthcare and social problems but frequent life crises preclude many from initiating or completing evidence-based psychotherapies for PTSD. Working within brief patient stays, we conducted a proof-of-concept study of an amassed series (90-120 min) of acceptance-based cognitive behavioral therapy (CBT) exercises for the reduction of PTSD symptoms (PTSS).

**Method:** Thirteen US military veterans were assessed in the psychiatric inpatient unit of a large VA hospital. Ten met criteria for PTSD and consented to treatment. All were male, with comorbid substance use disorders; 7 had a co-morbid psychotic disorder. Only one withdrew mid-treatment. One week later, 7 received a 15-30 minute booster session. Linear mixed modeling using SPSS was used for hypothesis testing. **Results:** PTSS showed large reductions at 1-week post-treatment, sustained at 3-4 week follow-up. Five (63%) of the eight patients with at least two completed assessments no longer met PTSD criteria. Depression symptoms and self-harm ideation showed large sustained reductions. Large initial anxiety reduction remained moderate. Psychotic symptoms showed no exacerbation; responders reduced in paranoia and hallucinations. **Conclusions:** Our findings are consistent with *sudden gains* literature, whereby 40-50% of people who will respond to CBT for depression or PTSD experience a sudden large symptom reduction, and the session preceding the large symptom decrease is marked by evidence of substantive insights. To initiate understanding and reduction of PTSS without fear of exacerbating symptoms, inpatient units and other settings may implement this highly structured yet flexible series of exercises.

By recent estimates, up to 90% of people experience at least one traumatic event in life, and approximately one-tenth will meet criteria for post-traumatic stress disorder (PTSD) (Kilpatrick et al., 2013). At least as many develop impairing PTSD symptoms (PTSS) without the full disorder (Bergman, Kline, Feeny, & Zoellner, 2015). Meta-analytic support shows trauma exposure is not only a significant risk factor for heart disease and many other physical conditions, but that severity of PTSS is associated with severity of pain, gastrointestinal, and cardio-respiratory symptoms (Pacella, Hruska, & Delahanty, 2013). Trauma exposure is also associated with adjustment, anxiety, mood, and substance use disorders, psychoses, suicidality, psychiatric hospitalizations, and psychosocial problems (APA, 2013; Nemeroff et al., 2006), all of which also drive social, law enforcement, and justice system costs (Heslin et al., 2017). Therefore, developing deliverable treatments for trauma-induced stress symptoms and PTSD is a major public health priority.

Fortunately, PTSD itself is treatable with evidence-based psychotherapies (EBPs) such as prolonged exposure (PE; Foa, Hembree, & Rothbaum, 2007) and cognitive processing therapy (CPT; Resick, Monson, & Chard, 2007). However, these treatments require 8-12 sessions of 60- or 90-minute appointments, which is not feasible for a large number of people. Logistical problems (e.g., work, travel, child care), substance use disorders, psychiatric hospitalizations, personality disorders, and other life challenges are notable obstacles (Najavits, 2015). Thus, there is an urgent need for interventions that can be administered within constraining real-world limitations experienced by many patients. Development of such protocols can be integrated into existing treatment opportunities. One such opportunity is inpatient psychiatric stabilization units, where prevalence of PTSD may be as high as 29% (see Havens et al., 2012). Of course, the challenges of these environments are formidable and have precluded traditional approaches to

treatment development: unpredictable duration of patient stays, heterogeneity of diagnoses, and lack of continuity between inpatient and outpatient therapies. Yet a critical strength of these settings is the temporary elimination of logistical barriers for individuals who are least likely to obtain treatment as outpatients while dealing with all their other life problems.

Fortunately there are several precedents for delivering amassed dosages of CBT techniques and anticipating large symptom reductions. First, for nearly 30 years Lars Öst (1989) and colleagues have pioneered effective single-session interventions of 2-4 hours for anxiety disorders ranging from snake and needle phobias to social anxiety. Second, expressive writing (EW) has been found to help reduce a myriad of physical and mental health symptoms including PTSS; meta-analyses (e.g., Frattaroli, 2006) show that shorter intervals between writing sessions do not detract from outcomes. Subsequent studies found multiple writing sessions within a 1- or 2-hour block very promising (Alessandri, 2016). Lastly, evidence for large symptom reductions following a particularly meaningful CBT session comes from research on *sudden gains* (SG). An SG is defined as a discreet between-session symptom reduction meeting three criteria: an absolute magnitude of at least the reliable change index (RCI) score for the scale used, at least 25% reduction from baseline, and with the mean of the two scores following the SG being significantly lower than the mean of the two scores preceding the SG (to demonstrate magnitude relative to other fluctuations in scores); SGs have been found in 50% of treatment responders to CBT for depression (Tang & DeRubeiss, 1999) and 39% of responders to CPT for PTSD (Kelly, Rizvi, Monson, & Resick, 2009). Of note, those who experience an SG also report significantly greater symptom reduction at post-assessment than gradual treatment responders.

Inspired by these findings and the urgent need to address PTSS we arranged a series of exercises for PTSS reduction as part of a hospital-mandated performance improvement project.

A similar arrangement of exercises was previously tested in a doctoral thesis as a comparison group for a single-visit 3-essay EW protocol (Alessandri, 2016). A full description of the exercises is beyond the scope of the present brief report but they will be referred to collectively as Trauma Acceptance Organizer (TAO) since their emphasis is on promoting acceptance and organization of internal and external experiences associated with a trauma. TAO exercises consist of 1) psychoeducation about PTSS, autonomic arousal, and avoidance; 2) experiential mindfulness and acceptance techniques; 3) a negative emotions list to promote desensitization and validation while circumventing alexithymia; 4) normalization and challenging of maladaptive cognitions; 5) a compassion exercise to reduce anger, blame, shame, and guilt; 6) a behavioral experiment to demonstrate overestimations of threat; 7) a positive emotions list to recognize posttraumatic growth; and 8) brief recovery planning for moving forward toward valued life goals.

### **Method**

**Participants.** Participants were veterans of the US military temporarily hospitalized in the psychiatric unit of a large Veterans Administration medical center in the southwestern US. Thirteen were invited to participate based on availability of the first author and referrals from inpatient staff. Ten met full DSM-5 criteria for PTSD. All were male (eight Caucasian, one Latino, one African-American). Chart review showed comorbid substance use disorders and multiple inpatient admissions in the prior 12-months (*Median* = 2) for all, history of suicide attempts by nine, and co-morbid psychosis diagnoses in more than half. All were receiving concurrent pharmacotherapies and had access to minimal, general, group therapies (e.g., a weekly anger management class, a weekly group on defining recovery). One patient was receiving electroconvulsive therapy (ECT). None were receiving individual psychotherapy.

**Measures.** The Life Events Checklist for DSM-5 (LEC-5; Weathers et al., 2013a) was administered as an interview to survey 17 possible areas of lifetime traumatic experience, with circumstances and consequences queried. Of the Criterion A stressors identified for PTSS severity assessment and TAO administration, eight involved *actual* violent death or injury by combat, military accidents, or suicide, and two involved imminent *threat* of fatal engagement.

While the CAPS-5 is the current gold standard tool for diagnosing PTSD in research studies, it typically requires 45-60 minutes to administer and was not used in this non-research clinical activity; however, CAPS-5 guidelines for assessing symptom frequency and intensity were used while verbally administering the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013b,c). For example, intrusive unwanted memories were rated as 0 if *absent*; 1 (*mild*) if frequency was < 2/month; 2 (*moderate*) if occurring 2+/month with distress clearly present and some difficulty dismissing the memory; 3 (*severe*) if distressing, difficult to ignore, and occurring 2+/week; and 4 (*extreme*) if the frequency and intensity were incapacitating. Mean baseline was in the severe range ( $M = 63.0$ ,  $SD=9.4$ , out of a possible 80). Cronbach alphas for pre-, post-, and follow-up assessments ranged from .79 to .96.

Depression and anxiety symptom levels were assessed using the 21-item version of the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995), administered verbally. Seven items per subscale are scored from 0 (*never*) to 3 (*almost always*). Internal consistency of subscales range from alphas of .87 to .94 (Antony et al., 1998). In our sample they ranged from .88 to .94 for depression and .68 to .91 for anxiety. Baseline depression ( $M = 17.70$ ,  $SD=3.97$ ) and anxiety ( $M = 13.50$ ,  $SD=3.60$ ) were in the extremely severe range.

Symptoms of psychosis and self-harm ideation were assessed with corresponding subscales of the 24-item Behavior and Symptom Identification Scale (BASIS-24; Eisen,

Normand, Belanger, Spiro, & Esch, 2004). Emotional lability, interpersonal functioning, depression, and substance abuse were also assessed but depression was more thoroughly assessed with the DASS-21; illicit substance use did not occur on the unit; and poor reliabilities preclude us from interpreting the emotional lability (.52 at baseline) and interpersonal dysfunction (.34 at follow-up) subscales. Across the three time points, alphas ranged from .73 to .84 for psychosis and .89 to .96 for self-harm ideation.

**Procedure.** This project served to fulfill a hospital-mandated program improvement project for postdoctoral residents and was deemed a non-research activity per Institutional Review Board guidelines. Thirteen patients consented to be assessed. Ten met criteria for PTSD and consented to receive the intervention, which consisted of the clinician leading the patient through TAO worksheets. One patient withdrew after 30% dosage. A week later, the clinician verbally administered post-assessments and then conducted a 15-30 minute review of key concepts. A follow-up assessment was conducted by phone at 3-4 weeks post intervention.

**Analyses.** Linear mixed modeling (LMM) was used for hypothesis testing using the SPSSv20 MIXED procedure; this procedure does not drop cases with missing data. One-week post-intervention data were missing for the patient who withdrew and for two patients discharged after less than a week on the unit. Two of these and one other were missing follow-up scores; one reiterated his enthusiasm for the intervention but phone signal was too poor to complete measures. Fixed effects are reported as inclusion of random effects did not improve the model.

## Results

PTSS showed large reductions at 1-week post-treatment and were maintained at follow-up (Figure 1). Five (63%) of the eight patients with at least two assessment periods no longer met PTSD criteria (and a sixth verbally reported “doing well” despite inability to complete

measures). Figure 2 summarizes depression and anxiety results. Depression showed a large effect size (ES) at post-intervention that was even larger at follow-up. For anxiety, a large initial ES remained moderate at follow-up. Using the BASIS-24, reduction in self-harm ideation was large ( $d=0.92, p=.01$ ) and maintained at follow-up ( $d=1.16, p=.002$ ). Psychotic symptoms showed no significant change ( $d=0.42, p=.207$ ). However, of four treatment responders with initially high suspiciousness of others, three no longer endorsed paranoia; two had also reported frequent hallucinations but they reduced these to *rarely* and *never*.

Figure 1. Mean PCL-5 scores at baseline, 1-week post, and 3-4 week follow-up.

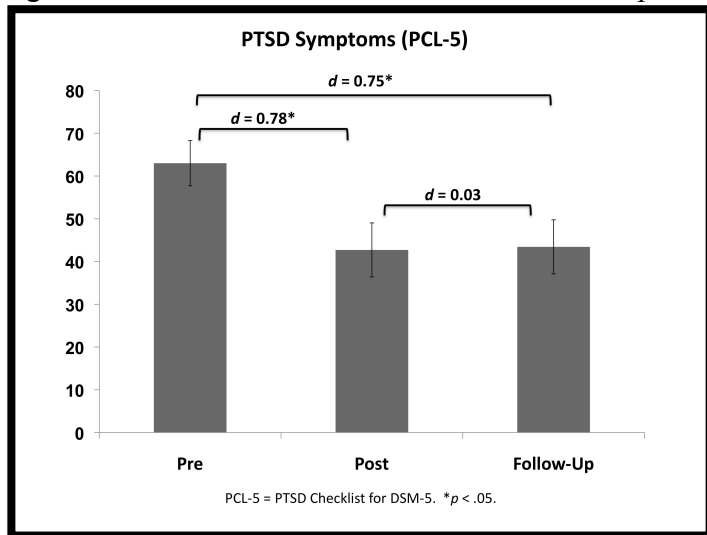
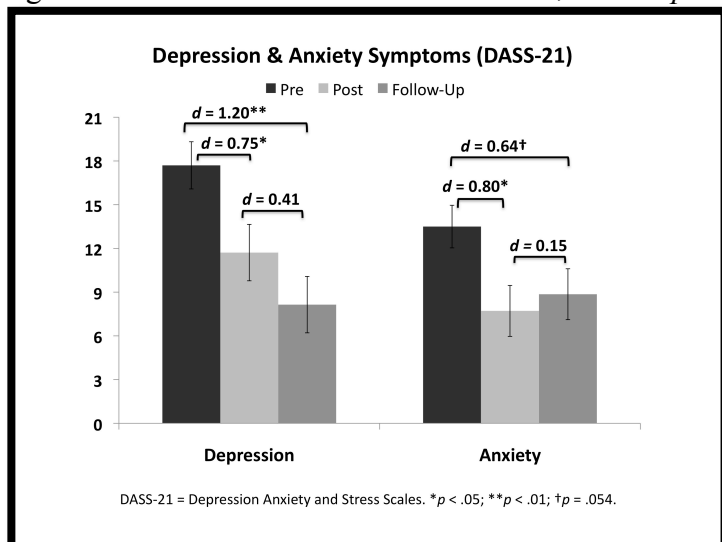


Figure 2. Mean DASS-21 scores at baseline, 1-week post, and 3-4 week follow-up.





Sudden gains could not be formally calculated due to lack of sessions required for the third criterion (Tang & DeRubeis, 1999). Nevertheless, the criterion of absolute point reductions was evidenced in reductions of between 21 and 46 points on the PCL-5, which exceeded an RCI requirement (see Kelly et al., 2009) of 11.92 points for this sample. PTSS reduction also met the requirement of 25% reduction relative to baseline severity; decreases ranged from 33-78%. Depression symptoms showed a reduction of 5-14 points, which exceeded the RCI requirement of 3.86, and represented 24-93% reduction relative to baseline. Anxiety required a reduction of 5.67 points for reliable change; four responders showed reductions from 6-13 points, and all five known responders showed reductions of 50-68% from baseline.

### **Discussion**

A collection of CBT exercises (TAO) administered in 90-120 minutes with a 15-30 minute review one week later appeared feasible and acceptable to 9 out of 10 inpatient military veterans with PTSD. While one withdrew mid-course, five of eight with at least one post assessment (63%) no longer met criteria for PTSD; a sixth verbally reported doing well at follow-up though he could not complete measures. One non-responder should likely not have been offered the intervention due to concurrent administration of ECT by other providers and long latencies in verbal responding (likely related to the temporary cognitive effects of ECT). Nevertheless, with all cases included in analyses we found large sustained ES's for symptoms of PTSD, depression, anxiety, and self-harm ideation. Additionally, there was no exacerbation of psychotic symptoms for the group, and, among responders, three out of four patients who initially reported high suspiciousness of others no longer endorsed paranoia at follow-up, and two who reported frequent hallucinations, later endorsed hallucinations *rarely* or *never*.

Our results are consistent with findings from sudden gains literature for PTSD and

depression, where 40-50% of those who are going to respond show one or more experiences of a sudden large symptom reduction. They are also consistent with findings that sudden gains are preceded by a session marked by a significant cognitive breakthrough; in our sample, large cognitive shifts were suggested by realizations such as, “None of those deaths were my fault!” and, “I see exactly what I have to do [to get my family back].” Our preliminary findings add modest support for a growing understanding (see Sloan et al., 2012) that for many people an adequate dose of treatment for PTSD may be less than formerly believed. These findings require replication and larger, controlled trials to obtain better estimates of ES, to control for confounders (medications, group and milieu therapies) and to ascertain which patient subtypes are most likely to benefit.

**Conclusions.** Despite the small sample size and confounders, a strength of this report is the lack of exclusion of comorbid conditions such as psychoses or substance use disorders, both of which are commonly found with PTSD. These preliminary findings suggest short-term facilities can offer TAO without evidence of harm to patients who present with PTSS. It may also be that a positive experience with TAO will facilitate engagement with follow-up services.

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