Pilot Testing a Manualized Equine-Facilitated Cognitive Processing Therapy (EF-CPT) Intervention for PTSD in Veterans

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Objective: The objective of this study was to test effectiveness and feasibility of equine-facilitated cognitive processing therapy (EF-CPT), a manualized adaptation of the cognitive processing therapy model for veterans with posttraumatic stress disorder (PTSD) championed by the Department of Veterans Affairs, in which equine-facilitated activities are integrated into face-to-face sessions. Method: Twenty-seven veterans with a diagnosis of PTSD participated ($M_{\text{age}} = 51$; 78% male) in a pretest-posttest design. Veterans were seen by a single psychologist for 12 sessions of individual EF-CPT. Instruments included: PTSD Checklist (PCL), Trauma Related Guilt Inventory (TRGI), Working Alliance Inventory (WAI), and the Human Animal Bond Scale (HABS). We hypothesized improvement on all measures, low attrition, and good model fidelity. Paired sample $t$ tests were conducted using SPSS. Results: PCL scores improved significantly ($M_1 = 68.25, M_2 = 35.96, p < .001$), as did TRGI scores ($p < .001$ on all scales). HABS and WAI indicated good working relationship. Two individuals attended one session and did not return (both under the age of 50); there was no other attrition (7% rate). Audio of sessions was reviewed for fidelity; there were variations in temporal order of session plans, which is within the acceptable flexibility of the manual. Conclusions and Implications for Practice: This manualized intervention has promise as an effective and well-tolerated treatment for veterans with PTSD.

Keywords: PTSD, equine-facilitated cognitive processing therapy, CPT, veterans

Impact and Implications
This pilot of an adapted, manualized equine-facilitated cognitive processing therapy model for veterans with posttraumatic stress disorder demonstrated efficacy and low attrition, suggesting a viable alternative treatment option for veterans who have been reluctant to engage with services. This pilot is unique in the use of a novel standardized manual and attention to fidelity to the model.

While rates of trauma-related diagnoses, specifically posttraumatic stress disorder (PTSD), in the adult general population of the United States are approximately 4%, postdeployment rates of PTSD in military veterans have hovered around 15%. Within the Department of Veterans Affairs (VA), the largest provider of services for veterans, it is estimated that only 1/3 of those with a diagnosis of PTSD received treatment from specialty services (Reisman, 2016). Recent evidence suggests that rates of veterans who have sought care for trauma symptoms has increased, and the recent change from the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM–IV; American Psychiatric Association [APA], 1994) to the fifth edition (DSM–5; APA, 2013) has raised new questions regarding prevalence rates and barriers to care (Lehavot, Katon, Chen, Fortney, & Simpson, 2018). There remains, however, a gap in the evidence base regarding rates of sustained engagement, and an even more concerning gap between onset of symptoms and initiation of help seeking (Elbogen et al., 2013; Lehavot et al., 2018). Rates remain low among veterans who would benefit from intervention and who are estimated to have received what is considered to be evidence-based treatment for PTSD: typically a course of cognitive processing therapy (CPT) or prolonged exposure (PE) therapy, for $\geq 9$ sessions, and dropout rates are high despite strong positive outcomes related to these therapies (Hoge, 2011; Monson et al., 2006; Seal et al., 2011).

While theories abound regarding reasons for poor treatment engagement (including concerns about privacy and stigma), suggestions have been made that provision of confidential services, in
financially and logistically accessible locations or in alternative treatment settings, would increase participation. Among the barriers to care are issues related to the negative perception of mental health care and providers (Kehle et al., 2010; Kim, Thomas, Wilk, Castro, & Hoge, 2010; Seal et al., 2011). It has been suggested that veterans with mental health issues may be more likely to seek alternative care options for their distress, such as equine-facilitated psychotherapy (EFP; Cohen et al., 2010). It is likely that involvement with EFP, at a location outside of a standard treatment setting using activities not usually included in office-based therapies, may be helpful in overcoming some of the stigma and resistance to care.

This study presents data from a pilot study of a manualized adaptation to the evidence-based CPT manual, military/veteran version (Resick, Monson, & Chard, 2006; Wharton, Scogin, & Malone, 2015). Outcomes in this prepost quasi-experimental pilot study focused on trauma, trauma-related guilt, and the relationship with the therapist using validated measures, with attention to fidelity to the model and feasibility in clinical practice. We hypothesized that veterans would have significantly lowered mean scores on validated measures of PTSD symptoms and trauma related guilt at posttest, and that lower symptom scores would correlate with higher scores on measures of therapeutic alliance. We also hypothesized that a manualized intervention that builds on an established evidence-based practice would be not only feasible in clinical practice, but would show low attrition rates and outcomes that are in keeping with the norms for known therapeutic interventions.

Context and Background

PTSD remains one of the most prevalent mental health conditions experienced by military veterans (Kok, Herrell, Thomas, & Hoge, 2012; United States Department of Veterans Affairs, 2018). Although PTSD prevalence rates among this population vary depending on different conflicts and periods, most estimate that between 13.5% and 30% of veterans experience some level of PTSD symptoms (Eber et al., 2013; United States Department of Veterans Affairs, 2018). PTSD is also the most frequently researched psychological condition among military members and veterans who deployed during recent conflicts (Cozza, Holmes, & Van Ost, 2013). Veterans with PTSD frequently encounter challenges in addition to the common diagnostic symptoms of reexperiencing, avoidance, negative thoughts or feelings, and arousal/reactivity. They are at risk for suicide, experiencing relational problems, employment issues, physical health problems, and legal difficulties (Gates et al., 2012; Koven, 2017; Park et al., 2017; Seal, Bertenthal, Miner, Sen, & Marmar, 2007). Unlike many civilians who deal with PTSD, many veterans report a sense of missing the elevated autonomic arousal feelings that became their “new normal” during combat or deployment experiences (Hoge, 2011), and will seek out and pursue risk-taking behaviors in order to maintain or regain higher levels of autonomic arousal. Significant numbers of veterans from recent conflicts who have PTSD are also dealing with the impacts of experiencing one or more mild traumatic brain injuries (Kaplan et al., 2018). Symptoms are often alike, but those who have both may experience more severe symptoms than those who have only one of these conditions (Defense and Veterans Brain Injury Center, 2016).

Another important factor to consider is the linkage between guilt related beliefs and symptomatology. Trauma-related guilt has long been recognized as a component in PTSD, with evidence strongly supporting the link between beliefs related to events and the ability to recover from trauma (Kubany, 1994; Kubany et al., 1995). Feelings of guilt lead to disengagement and cognitive distortions, and evidence suggests that guilt may be a mediating factor between aggressive behaviors, depression, and trauma among veterans (Marx et al., 2010). Because of the strong relationship to cognitive distortion, CPT interventions can have an impact on improved guilt, meaning that changing the way that an individual thinks about related components, such as perceived responsibility, lack of justification, wrongdoing, and beliefs about preoutcome knowledge, can lead to corresponding improvements in overall distress, depression, and PTSD symptoms (Browne, Evangeli, & Greenberg, 2012; Held, Owens, Schumm, Chard, & Hansel, 2011; Kubany et al., 1995; Kubany & Manke, 1995; Nishith, Nixon, & Resick, 2005).

The most frequently employed evidence-based interventions used to treat trauma are CPT, PE, and eye movement desensitization and reprocessing (EMDR; Reisman, 2016). There is a robust amount of evidence supporting the use of these approaches (Briere & Scott, 2015; Goodson, Lefkowitz, Helstrom, & Gawrysiak, 2013; Kar, 2011). However, half or more of veterans who could benefit resist beginning or stop participating partially through a course of sessions (Department of Veterans Affairs and Department of Defense, 2017; DeVita et al., 2016; Goetter et al., 2015; Hoge et al., 2014; Monson et al., 2006; Peterson, Foa, & Riggs, 2011). Suspected reasons for this resistance include the frequency and number of sessions involved in these interventions, high level of avoidance in confronting their trauma experiences, impaired relationships with therapists, a sense of stigma when asking for help, a wish to not be seen as “weak,” and perceptions related to confidentiality (Fragidakis & Toriello, 2014; Hoge et al., 2014; Hoyt & Candy, 2011).

Theory of Change and Models of Intervention

Theory of change has been well-established for each of these models. PE therapy seeks to facilitate recovery via repeated imaginal and in vivo exposure exercises. Through these repeated exposures, the fear component of the event is triggered, which is then modified by providing corrective information (Gallagher & Resick, 2012). EMDR therapy works to desensitize participants to anxiety while integrating information processing. This intervention uses a dual-attention stimulus, such as rapid eye movements, to increase activity in brain centers responsible for information processing. Through use of induced arousal and relaxation, the therapist is proposed to reconnect stored information from the traumatic event with new physiologic responses, successfully integrating the two components over the course of therapy (Chen et al., 2014). In CPT, maladaptive cognitions resulting from the traumatic event are directly modified. By repeating the challenges while concurrently utilizing cognitive restructuring techniques, participants are able to develop healthier and more balanced internal evaluation of the event and themselves. Recovery and/or decreased symptoms are proposed to stem from this restoration of adaptive thought processes. While there are many similarities between PE and CPT, their core aspects set them very much apart.
PE utilizes habituation as the causal mechanism of change, whereas CPT emphasizes targeting cognitive distortions (Gallagher & Resick, 2012).

In efforts to improve CPT outcomes and attrition rates, modifications to the therapy are continuously being hypothesized and tested. One such is the incorporation of equine-facilitated activities into the protocol. This stems from the idea of the equine interaction serving as a bridge between the therapist and the veteran, allowing the challenging sessions to be less direct and more interactive, while working toward the same goals as the traditional setting, essentially operationalizing the principle of externalization. As with all treatments for patients within the VA, for a therapy to be billable and endorsed by the organization, it must have evidence of its efficacy and effectiveness, so developing the evidence base around alternative therapy options that may help reduce attrition and engage hesitant clients in therapy is critical.

This addendum to the CPT Patient Workbook, Military Version (Resick et al., 2006) allows therapists to adhere to the CPT protocol and associated activities with fidelity while adding components that provide alternatives to office-based intervention, which are often shunned by veterans. Equine-facilitated cognitive processing therapy (EF-CPT) incorporates the traditional CPT 12 sessions and includes the same goals for each session. It also includes focused equine-facilitated activities to be completed by the veteran with support from the therapist; alternative activities are also described to increase participant choice and provide flexibility to the therapist in responding to client preference. Each week has proposed, but flexible, time tables within the therapy session that largely mirror the office-based framework, plus brief additional time for initial retrieval and return of supplies and materials (in addition to the horses) that may be needed in the session.

The structure of CPT provides a clear framework for the therapy process, and the focus on understanding linkages between abstract states of emotion (such as helplessness, e.g.) and concrete stimuli fits well with the underlying assumptions in EFP. As prey animals, horses are particularly sensitive to issues of incongruity, agitation, or increased autonomic activity in other animals (including humans), and trained equine handlers are able to identify the signals of confusion in the animal. While CPT focuses on cognitive reframing, the inclusion of an equine partner in this process provides an opportunity to include physical activity that directly addresses physiological dysregulation, as well as engagement activities that address trust issues, frustration and intolerance of mistakes, and impatience.

While much attention has been given to the area of hippotherapy (equine-facilitated physical therapy), literature regarding the benefits of EFP has only begun to appear in the last 20 years. A recent systematic review identified 14 studies of EFP that met minimal criteria for scientific rigor (Selby & Smith-Osborne, 2013). Although findings from these studies all provided very promising outcomes, none of them rated high in research rigor, and few provided a manual for the intervention, inhibiting replicability. One of the challenges to conducting research in this area is that few studies have used a manualized treatment. The Equine Assisted Growth And Learning Association model (more accurately described as a framework of principals for therapy) is frequently referred to in the available research, and psychotherapy generally involves some standardized theories and concepts, however, the absence of a clear description of what has been done, in what order, and with what assumptions creates challenges to assessment of treatment consistency or fidelity, either within studies, or across studies. Only two of the 14 studies identified by Selby and Smith-Osborne (2013) used a manualized intervention: One focused on psychodrama with adults, and the other combined talk therapy with adventure-based/EFP treatment activities for youth. Both evidenced significant treatment effects. Although these two studies are with different populations than the study described here, their findings suggest that EFP is a promising approach, and while the study described in this paper is limited by a lack of control group, the presence of a manual, rigor of implementation, and attention to fidelity make this pilot unique.

Many therapists, particularly those who use animal-assisted or alternative-treatment models, resist the inclusion of a manual in their interventions, noting the restrictions of such frameworks, particularly on more psychodynamic orientations. However, the absence of a manual precludes clear identification of process and procedure for research purposes, which has been a noted weakness in the current body of literature. The introduction of some parameters like the use of a standardized manual helps to eliminate some of the alternative hypotheses related to intervention styles and can allow researchers to begin identifying whether equine-facilitated therapies can provide either equal or better outcomes than office-based therapy, and whether they can be used to address the high attrition rates of veterans who could benefit from mental health intervention. Additionally, a very solid body of literature supports CPT as a “best practice” for intervention in this population; with this in mind, piloting an intervention that builds on this substantial body of work while addressing alternative treatment options has potential for significant impact in clinical practice settings. It also has the potential to open policy options that limit billable intervention approaches. This pilot study posits that a carefully constructed manualized intervention that affords options for flexibility and choice in tailoring the intervention to the client’s needs provides the best of both worlds and is feasible in real-life practice.

Method

The intervention was delivered by a licensed clinical psychologist with substantial experience in this format of therapy delivery and who has worked with military and veteran populations for more than 30 years. The psychologist providing the intervention received training from the local VA trainer for CPT, to ensure competency in the basic model prior to initiation of this pilot study, and co-created the manual for the adapted EF-CPT intervention. The psychologist had an independent practice office at a farm location, and the farm was already engaged in seeing clients of all ages and demographics for various types of activities, including psychotherapy, physical therapy, and riding lessons for people of varying physical abilities. The psychologist provided the intervention at no cost to the clients, and did not bill for any participants in this study, in order to avoid any bias or limits on some but not all clients. Since her time was volunteered, she provided these pro bono services to only a few study participants at a time, as part of her regular independent practice caseload, and was clear with participants that if they wished to continue to see her beyond the 12-session protocol, she would need to resort to billing, as per her normal policies.
Participants were recruited through word of mouth and referrals from local groups and providers. Notably, very few of the participants would have been billable for PTSD treatment, due to restrictions related to VA benefits and referrals, rules regarding treatment for PTSD in various military cohorts (such as pre-9/11 veterans), or insurance regulations. In the state where this pilot took place, there exist veterans who meet the criteria for PTSD but do not have 24 months of continuous active duty service as required by the VA Health Care criteria rules, and are thus ineligible for treatment. While many of these veterans may have seen significant combat during a 12-month deployment, for example, they may have been returned to reservist duty or discharged for medical reasons (including trauma) upon return, thus disqualifying them for care through the VA. Additionally, there are a substantial number of Vietnam, Korea, and WWII veterans in the area who do not have access to required documentation (DD214 service record) as a result of a fire in Kansas City that destroyed records of active duty service. There are mechanisms available to appeal denials of service through the VA, but many veterans are disillusioned and overwhelmed with this process (Zogas, 2017). In addition to these barriers, although the service provided by the area VA medical center is provided by licensed and trained clinicians, there is a long waiting list for intake.

At intake, a structured clinical interview was done by the same licensed clinical psychologist, to confirm that all clients had a PTSD diagnosis and to ensure that they were not engaged in any concurrent therapy relationships. The clinical interview was done according to the VA protocol for determining the diagnosis of PTSD, which uses ICD-10 (World Health Organization, 1992) and DSM-IV criteria to establish diagnosis. The psychologist doing the interview was trained by the governmental contract agency charged with identifying PTSD in veterans applying for benefits. Intake measures were completed and weekly appointments were set up. Clients were informed that a researcher would be analyzing data from their participation and were offered the opportunity to be excluded from the study and still receive the intervention. The study was reviewed and approved by the University of Central Florida Institutional Review Board (SBE-17–12857).

The intervention consisted of a 12-session adaptation of CPT in which equine facilitated psychotherapy techniques were infused (Table 1 presents session examples). Sessions were conducted weekly and took place at Serendipity Farm in Cottondale, AL. The psychologist audio recorded sessions and members of the research team randomly reviewed the recordings to assess fidelity and potential model drift. Audio recordings were destroyed after review for client privacy. Additionally, a coauthor of the manual (also a licensed mental health provider) was available for consult by telephone as needed. Measures were again completed by participants at the end of the final session. Data were entered into a spreadsheet and sent to a blinded member of the research team for analysis. Data were imported into SPSS, along with basic demographic data such as age, gender, and number of sessions completed.

The sessions address topics that are consistent with the normal CPT manual, such as identifying emotions, retelling of the traumatic event, identifying thinking patterns, and addressing trust, intimacy, power, and control. Clients also complete and verbally process the worksheets included in the CPT Patient Workbook, per standard CPT protocol. An example of an equine-facilitated activity involves a task of leading the horse with no lead rope or without a lead rope. The participant is asked to lead the horse while being supported by a clinician. The participant then approaches the horse with the lead rope and notes the horse’s reaction. The clinician can discuss the participant’s thoughts and feelings about the experience.

### Table 1

**Example EF-CPT Session Foci and Exercises**

| Example Session 2: Focused on the meaning of an activating event. work includes addressing identifying emotions, and identifying the connections between the event, thoughts, and feelings using the A-B-C strategy. |
| Suggested equine exercise: Set up a herd dynamic with an alpha horse and several other herd-mate horses alone in the paddock with hay; the participant and therapist observe the herd behavior in this situation from a safe distance, and discuss what is observed, what the individual perceives to be happening and resulting, and how s/he feels about it; this will involve both discussion of the perception and education around herd and human pecking order and resulting behavior. |

| Example Session 3: Focused on the participant telling a story of trauma, with as much sensory detail, and emotional recall as possible. The individual will be coached and supported in feeling emotions related to the event and continuing in the telling of the story. |
| Suggested equine exercise: The participant selects and grooms a horse from the prior sessions. As before, the horse will be held or tied as per the horse handler’s safety-based decision and the individual will be given a curry comb as well as a soft brush and instructed briefly in the use of these items. The participant will curry in a circular motion and brush in lengthwise strokes during the session. Participant is asked Socratic questions by the therapist as they groom the horse. If the participant has difficulty with the Socratic questions about his/her memories of the event, the participant will be asked to anthropomorphize the behavior of the horses as observed in the previous sessions, and this can be a springboard to relate to the participant’s own memories of his/her event. |

| Example Session 4: Involves learning more about challenging questions, and finding examples of problematic thinking patterns. The client will practice, with coaching, thinking through the challenging questions. This will help to identify ways in which faulty cognitions have created reactions to the trauma event that helps to frame the meaning. Because this phase of the intervention involves growing the confidence of the participant to identify and challenge his/her own beliefs, equine exercises will address building self-confidence in actions, in creating thought processes, and in decision making. |
| Suggested equine exercise: A variation of Parelli’s friendly game may be used to work on building self-confidence: the participant is asked to hold the lead rope of the horse, and boldly and firmly step close to the horse and notice the reaction. Most horses will be uncomfortable with this bold approach and give some indication of that discomfort, such as tossing the head or moving back. Examine with the participant the horse’s reaction and any reaction that the participant may have had, and relate these to feelings about having personal boundaries violated. Coach the participant through ways to ask and approach the horse and be accepted into the space. The participant may need reassurance that retreat and trying again is a completely acceptable choice when there is discomfort in boundary violation. Issues to be discussed include boundaries, comfort levels, recognizing and respecting discomfort, retreating, and what it is like to be the alpha and lead with respect. Discussion will also include the benefits of getting horses/people to respond in ways because they want to, rather than out of fear. |

**Note.** EF-CPT = equine-facilitated cognitive processing therapy.

*All sessions also include material from appropriate sessions found in the VA-endorsed cognitive processing therapy (CPT) manual.*
This activity provides a platform to engage with the therapist on leadership styles, alpha behavior, force versus coercion, and other concepts which may play a part in a combat-related trauma. Through activities like these, clients are able to both use the horse as a reflection of behavior—in observance of the horse or herd, or in how humans interact with the horse or herd. They also provide an externalizing focus that engages active movement which may also provide some neurocognitive stimulation that can help in processing memories.

Measures

PTSD Checklist (PCL)-Military Version (PCL-M). The PCL is a self-report measure that assesses symptoms of PTSD (Weathers, Litz, Herman, Huska, & Keane, 1993). It has several versions. We considered using the PCL-5, which is key to the new DSM-5 but chose the PCL-M for DSM-IV instead as it has better available psychometric data and was developed for use with veterans. The PCL has become the VA standard for PTSD assessment and has been used in major clinical trials. It has 17 items, takes about 5–10 min to complete, and items are rated on a 5-point scale anchored by Not at all and Extremely. The PCL-M has a Cronbach’s alpha between .75 and .80 (Owens, Herrera, & Whitesell, 2009).

Trauma-Related Guilt Inventory (TRGI). The TRGI (Kubany et al., 1996) is comprised of six subscales: Global Guilt, Distress, Guilt Cognition, Hindsight Bias, Wrongdoing, and Justification. The TRGI is included to determine if EF-CPT is effective in altering unhelpful cognitive processes. It was used for the same purpose in the landmark Monson et al. (2006) study of CPT with veterans. This inventory has been found to be reliable in use in assessing veterans with a Cronbach’s alpha between .89 and .91 (Kubany et al., 1996).

Working Alliance Inventory-Short Form (WAI-SF). The WAI-SF (Hatcher & Gillaspy, 2006) is a 12-item self-report measure of the therapeutic alliance between client and therapist. The WAI-SF contains the traditionally defined components of the alliance and scores each on a subscale, in addition to the scale total: agreement on tasks, agreement on goals, and the emotional bond. It has been found to be quite reliable, with a Cronbach’s alpha of .91 (Hatcher & Gillaspy, 2006). The WAI-SF is included to determine the relation between alliance scores and reductions in PTSD scores. Although this measure is often used to determine discrepancies between clients and providers, this study used the measure only to look at participant responses.

Human-Animal Bond Scale (HABS). The HABS (Terpin, 2004) measures the bond of participant and equine developed over a short period of time. The HABS includes 15 items, and uses a 5-point scale anchored by strongly disagree and strongly agree. Psychometrics have not been established for this scale, although it appears to have good face validity. Cronbach’s alpha reliability for the scale in this sample (n = 27) was calculated at .53, although the sample size here is too small for this to be a completely valid indicator. The HABS is included to determine the relation between bond scores and reductions in PTSD scores.

Results

Twenty-seven veterans participated (M age = 51; 78% male) and all met VA criteria for diagnosis of PTSD, although four of these (2 men and 2 women) might also have been classified as dissociative identity disorder, according to the treating clinician. All but one had additional diagnoses related to mood disorders. Of these, 21 identified their index trauma as being combat related, four (3 men and 1 woman) identified their index trauma as being a sexual assault, seven (5 men and 2 women) identified their index trauma as being a physical trauma of some kind, and five (4 men and 1 woman) indicated more than one kind of trauma, such as both sexual assault and combat-related trauma, for example (note that numbers overlap and therefore do not add up to a total of 27).

PCL scores improved significantly (M1 = 68.25, M2 = 35.96, p ≤ .001; Figure 1), as did TRGI scores (p ≤ .001 on all scales; Figure 2). The HABS and WAI were administered after the first session (as opposed to prior to beginning) and after the final session, since these measures inquire about the perception of the relationship between therapist and client, and client and horse. These measures indicated a good working relationship at baseline and significant improvement over the course of therapy between both the therapist and client, and between the horse and client (Table 2). Regarding attrition, two individuals attended one session and did not return (both were under the age of 50); there was no other attrition (7% rate). Since scores on all measures were highly significant, we did not examine the relationship between the HABS and WAI and other measures; it is possible that with a larger sample size, there could be sufficient variance to consider such analyses.

To explore the issue of cohort variation, we examined the outcomes divided by age cohort: over and under the age of 50; this roughly divided the group into older veterans (WWII, Vietnam, Korea) and younger veterans (post-9/11). While scores for both groups remained statistically significant from pre- to post-assessment across all instruments and subscales, the group of older veterans was slightly less dramatic (Table 3). For the veterans under the age of 50, all scores were statistically significant at <.001. While we can only speculate, this difference may have been more notable with a larger sample size. None of the older cohort veterans dropped out of therapy and each completed all 12 sessions.

Fidelity to the manual was high. The psychologist understood the importance of rigor and fidelity in research, and remained as true to these principles as possible. Random review of audio
recordings indicated excellent adherence to the manual and style of intervention, with the only notable variance being in application of topic order. The EF-CPT manual proposes a temporal order of topics that mirrors the traditional CPT manual which are addressed over the course of the 12-week treatment plan. Flexibility is acceptable within the normal usage of the manuals: as long as all topics are covered, changes in temporal order of addressing them falls within the parameters of the use of a manual in mental health therapy interventions. The psychologist conducting the intervention noted that there were regular changes to the order of topics, based on the individual needs of clients (e.g., skipping to a session that addresses leadership and guilt before completing topics related to symptom management), but in reviewing her clinical notes, she was unable to identify a pattern of changes, beyond responsiveness to client needs in vivo.

Figure 2. Pre- and post-Trauma Related Guilt Inventory (TRGI) scores (N = 27).

### Table 2
Prepost Scores for All Measures and Subscales

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean-pre (SD)</th>
<th>Mean-post (SD)</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL</td>
<td>68.24 (9.64)</td>
<td>35.96 (9.15)</td>
<td>16.18</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Global Guilt</td>
<td>3.01 (1.36)</td>
<td>1.51 (.60)</td>
<td>6.49</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Distress</td>
<td>3.37 (1.13)</td>
<td>1.97 (.53)</td>
<td>9.49</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Guilt Cognition</td>
<td>2.62 (1.17)</td>
<td>1.65 (.43)</td>
<td>5.52</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Hindsight Bias</td>
<td>2.57 (1.38)</td>
<td>1.47 (.50)</td>
<td>5.21</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Wrongdoing</td>
<td>2.86 (1.19)</td>
<td>1.79 (.57)</td>
<td>6.29</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Justification</td>
<td>2.78 (1.39)</td>
<td>1.69 (.73)</td>
<td>5.50</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>HABS(^a)</td>
<td>66.59 (6.91)</td>
<td>73.26 (2.47)</td>
<td>5.14</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>WAI-SF: Goal Items(^a)</td>
<td>17.81 (2.02)</td>
<td>19.89 (.42)</td>
<td>5.34</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>WAI-SF: Task Items(^a)</td>
<td>17.74 (2.25)</td>
<td>19.78 (.85)</td>
<td>4.83</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>WAI-SF: Bond Items(^a)</td>
<td>18.19 (2.02)</td>
<td>19.93 (.38)</td>
<td>4.41</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>WAI-SF: Total score(^a)</td>
<td>53.74 (5.58)</td>
<td>59.59 (1.58)</td>
<td>5.44</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note. N = 27. PCL = PTSD Checklist; TRGI = Trauma Related Guilt Inventory; HABS = Human Animal Bonding Scale; WAI-SF = Working Alliance Inventory-Short Form.

\(^a\) Higher scores = improvement.

**Discussion**

There is a solid body of evidence supporting the use of CPT for treatment of trauma in military veterans, and providing evidence of improved symptoms (Kar, 2011; Monson et al., 2006; Rutt, Oehlert, Krieshok, & Lichtenberg, 2018). This study examined an adaptation of the VA-endorsed CPT manual for use with veterans that added equine-facilitated interactions to the face-to-face sessions, while keeping the integrity of the overall model. According to a systematic review of literature that examined rigorous studies of CPT, previous research has found between 40 and 60% of participants no longer met the criteria for diagnosis at the end of the intervention (Steenkamp & Litz, 2013). In this study, 84% (n = 21) no longer met the criteria for diagnosis, using a cutpoint of 50 on the PCL-M; using the general population criterion of a score of...
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wharton, whitworth, macauley, and malone

Table 3
Prepost Scores for All Measures and Subscales—Participants Over Age 50

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean-pre (SD)</th>
<th>Mean-post (SD)</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL</td>
<td>66.40 (7.41)</td>
<td>38.50 (10.82)</td>
<td>7.30</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Global Guilt</td>
<td>2.54 (1.41)</td>
<td>1.23 (.31)</td>
<td>3.73</td>
<td>.003</td>
</tr>
<tr>
<td>TRGI: Distress</td>
<td>3.01 (1.16)</td>
<td>1.78 (.49)</td>
<td>5.16</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>TRGI: Guilt Cognition</td>
<td>2.20 (1.56)</td>
<td>1.44 (.27)</td>
<td>2.79</td>
<td>.018</td>
</tr>
<tr>
<td>TRGI: Hindsight Bias</td>
<td>2.05 (1.31)</td>
<td>1.25 (.25)</td>
<td>2.29</td>
<td>.043</td>
</tr>
<tr>
<td>TRGI: Wrongdoing</td>
<td>2.37 (1.19)</td>
<td>1.57 (.50)</td>
<td>3.30</td>
<td>.007</td>
</tr>
<tr>
<td>TRGI: Justification</td>
<td>2.25 (1.53)</td>
<td>1.38 (.52)</td>
<td>2.56</td>
<td>.027</td>
</tr>
<tr>
<td>HABS*</td>
<td>68.50 (5.33)</td>
<td>73.33 (2.96)</td>
<td>−3.19</td>
<td>.009</td>
</tr>
<tr>
<td>WAI-SF: Goal Items*</td>
<td>18.08 (1.83)</td>
<td>19.75 (.62)</td>
<td>−3.25</td>
<td>.008</td>
</tr>
<tr>
<td>WAI-SF: Task Items*</td>
<td>18.00 (2.52)</td>
<td>19.67 (1.15)</td>
<td>−2.31</td>
<td>.041</td>
</tr>
<tr>
<td>WAI-SF: Bond Items*</td>
<td>18.08 (2.15)</td>
<td>19.83 (.58)</td>
<td>−2.73</td>
<td>.020</td>
</tr>
<tr>
<td>WAI-SF: Total score*</td>
<td>54.17 (5.44)</td>
<td>59.25 (2.30)</td>
<td>−3.21</td>
<td>.008</td>
</tr>
</tbody>
</table>

Note. N = 12. PCL = PTSD Checklist; TRGI = Trauma Related Guilt Inventory; HABS = Human Animal Bonding Scale; WAI-SF = Working Alliance Inventory-Short Form.

Higher scores = improvement.

40, 72% (n = 17) no longer met the criteria for diagnosis at the end of the intervention. While there are few studies with which we can make a direct comparison, the findings here indicate higher recovery rates than more traditional applications of CPT, although we make this assertion with caution due to the small sample size.

While the PCL scale is the gold standard for PTSD symptom improvement, few studies have included measures of trauma-related guilt, despite substantial evidence of the mediating impact that guilt-related beliefs may have on the ability to recover from PTSD (Held et al., 2011; Kubany, 1994). Consistent with previous evidence, we found that veterans who struggle with PTSD also may be living with guilt-related distress (Held et al., 2011; Monson et al., 2006). This intervention lowered levels of trauma-related guilt across all domains, for all participants. While the sample here is small and the study is limited by a lack of control or comparison group, this is a promising outcome that would benefit from further investigation.

The psychologist was able to complete the course of treatment within the normal course of her practice; although the measures took time, they were clinically useful and provided easy-to-use outcomes measures. The psychologist expressed satisfaction with the options available for tailoring the intervention to meet the client’s needs, and with the opportunities to explore cognitive change embedded in the protocol, and indicated that she was happy with the outcomes with these clients. She indicated that the framework provided a designated endpoint and timeline for therapy that some clients found reassuring and that necessitated focused approaches to use of time each week.

As with traditional office-based CPT with this demographic population, few clients completed 100% of the homework prior to attending scheduled therapy sessions, but this possibility was built into the manual a priori, based on previous experience of experts in the model. Given the hesitancy with which veterans engage with therapy to begin with, the psychologist who provided the therapy in this study has a standard practice of incorporating the work into the session if they have not finished it when they present to the session. Since the therapy protocol involves reviewing the homework, it adds little time or burden. Such incorporation of remaining homework is consistent with guidance provided in the CPT manual, which indicates that when a veteran does not complete the homework “the therapist has the patient do the assignment orally (or they complete a worksheet together) in the session and reassign the uncompleted assignment along with the next assignment” (Resick et al., 2006, pp. 6–7). Feedback from the psychologist indicates that this manualized intervention is feasible in clinical practice, a critical component of sustainable implementation that is often overlooked in translational studies.

It is notable, however, that few of these clients were billable due to a complex web of insurance and provider restrictions, and so few of them had previously ever sought treatment for their PTSD. As previously discussed, there are a range of reasons for which veterans and military personnel avoid therapy, but being able to pay for it is definitely on that list. The findings in this study support the development of improved billing mechanisms for interventions that show evidence of effectiveness in community-based settings for both veterans of all cohorts (not just post-9/11 veterans), as well as for older adults who rely on Medicare or Medicaid as primary insurance.

The implications of alternative models of therapy that are grounded in evidence-based theoretical models such as this one, with identifiable mechanisms, manualized structure, and delivery by trained and licensed providers being made more available to veterans could be substantial. If 12 sessions of therapy can provide relief from PTSD symptoms and trauma-related guilt sufficiently enough to enable an individual to maintain living independently at home, or retain family support or workforce participation, the economic gain could be substantial. Support for therapy models that demonstrate low attrition and provide attractive alternatives to office-based therapy in outpatient treatment settings would provide viable alternatives for clients, as well as therapists who are willing to offer such services if they can bill for them.

References


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