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Treating Veterans at Risk for Suicide: An Examination of the Safety, Tolerability, and Outcomes of Cognitive Processing Therapy

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Individuals with posttraumatic stress disorder (PTSD) are at increased risk for suicidal thoughts and behaviors; however, clinicians often report apprehension about recommending trauma-focused therapy to patients with an increased risk of suicide. The present study aimed to evaluate the safety, tolerability, and response to cognitive processing therapy (CPT) among a sample of military veterans with PTSD and increased suicide risk. A secondary aim was to provide a clinically useful definition of high suicide risk. Chart review was used to classify the suicide risk level of 290 veterans who participated in CPT at a Veterans Affairs clinic. Treatment outcomes in veterans with different suicide risk levels were also gathered and compared. Over 50% (n = 155) of the sample demonstrated increased suicide risk, and 1.0% (n = 3) engaged in suicidal behavior after initiating treatment. To date, hospital records show no suicide deaths since 2016 among clinic patients who received CPT. Suicide risk level was not associated with CPT tolerability, and PTSD symptom change was equivalent across groups, ps = .085-.976. Veterans across groups reported clinically significant reductions in PTSD symptoms. The tested suicide risk categorization schemes performed similarly in differentiating the odds of CPT completion and PTSD symptom reduction. These results suggest that veterans with PTSD and an increased risk of suicide, including those with previous suicide attempts and current ideation, can tolerate and benefit from CPT. Additional variables must be considered to truly determine the acute and imminent suicide risk that would deem CPT to be contraindicated.

Historically, providers across mental health care systems have been reluctant to administer trauma-focused therapy to patients suffering from posttraumatic stress disorder (PTSD), citing concerns such as patient motivation, comorbid psychiatric problems, and/or cognitive problems (Cook et al., 2014). Due to the perceived importance of stabilizing suicide risk among patients with PTSD (Jakupcak & Varra, 2011), providers frequently report acute suicide risk as a particular psychiatric concern when deciding whether to withhold or delay PTSD treatment (Bryan, 2016; Harned et al., 2010; Stirman, 2008). Further, randomized control trials for trauma-focused therapies, such as cognitive processing therapy (CPT), have generally omitted individuals deemed to be at acute risk for suicide (Maieritsch et al., 2016; Resick et al., 2008). More recently, clinical trials have examined suicidal ideation as an outcome of treatment (e.g., Resick, Wachen, et al., 017), and these data provide initial support for administering CPT to patients

experiencing ongoing suicidal ideation and/or have a history of suicidal behavior (Bryan et al., 2016; Holliday et al., 2018; Stayton et al., 2019).

Since 2010, suicide rates in the United States have increased from 12.1 per 100,000 to 14.2 per 100,000 in 2018 (American Foundation for Suicide Prevention [AFSP], 2020). Even more alarming is that U.S. military veterans are at higher risk for both PTSD and suicidal thoughts and behaviors (Legarreta et al., 2015; Pompili et al., 2013) than civilians. It is important to note that suicide risk itself is a construct that yields many different operationalizations, and different mental health organizations and research studies utilize different criteria to categorize risk levels. Indeed, the lack of agreement regarding how to best define suicide risk is perhaps best captured by the findings from a meta-analysis by Franklin and colleagues (2017), who reported that despite over 50 years of research, hundreds of investigations, and analyses of nearly 3,500 risk factor variables, the ability to predict suicide is only slightly above chance and has not improved. The sheer number of risk factors used across clinical and research settings demonstrates the variability of suicide risk conceptualization.

Often, there are protocols or guidelines that clinicians and researchers are required to follow when determining suicide risk levels based on these risk factors. For example, there is a significant amount of empirical evidence demonstrating that

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prior suicidal thoughts and behaviors are significant risk factors for future suicide attempts (Andover et al., 2008; Kuehn et al., 2020; Irigoyen et al., 2019). As a result, suicidal thoughts and attempts are often treated as homogeneous constructs that confer a high risk for suicide. According to current standards outlined by the U.S. Department of Veterans Affairs (VA; 2019), suicide risk is considered to be both acute (e.g., time-sensitive) and chronic (e.g., ongoing). These distinctions are similar to the conceptualization of suicide risk within the fluid vulnerability theory (FVT; Bryan et al., 2020; Rudd, 2006), which delineates suicide risk as having both a baseline determined by an individual's stable suicide risk factors (e.g., family member death by suicide, history of suicidal behavior) and acute factors (e.g., recent loss, current suicidal ideation). According to the VA/Department of Defense (DoD) risk categorization algorithm, although chronic suicidal ideation may be present for individuals with chronic risk, those identified to be at acute risk for suicide will likely have current suicidal ideation with or without the intent to act on a plan (VA/DoD, 2019). Treatment recommendations are provided for each risk level. For example, providers are encouraged to consider psychiatric hospitalization for individuals deemed to be at "intermediate acute risk" (i.e., those with current suicidal ideation and the ability to independently maintain safety). However, theories that attempt to explain or predict how or when individuals experiencing suicidal thoughts progress to suicidal behaviors (i.e., "ideation-toaction" framework; May & Klonksy, 2014) would all suggest that additional variables should be considered, including one's capability for suicide (Joiner, 2005) or the presence of an activating event (Rudd, 2006). In the absence of such factors, outpatient treatment would theoretically be a better treatment recommendation than hospitalization.

Given the nationally recognized priority to prevent suicide (Exec. Order No. 13625) and the fact that PTSD is one of few psychological risk factors that has been shown to differentiate suicidal ideators from suicide attempters (Burke et al., 2018; May & Klonsky, 2016; Nock et al., 2008), the treatment of PTSD is critical (Jakupcak & Varra, 2011). However, providers may be reluctant to administer trauma-focused interventions to individuals who are at an increased risk for suicide (Cook et al., 2014). This may be due to the perceptions that these treatments increase distress. For example, CPT, one of the psychotherapies with the strongest recommendations from the current VA/DoD Clinical Practice Guideline for the Management of PTSD (VA/DoD, 2017), is a 12-session, trauma-focused manualized therapy protocol that unfolds in three phases. In the first phase, patients are provided psychoeducation about PTSD and how thoughts are related to environmental events, emotions, and behaviors. Next, they learn how to identify cognitions that cause them distress and investigate the validity and helpfulness of these thoughts. Finally, they are taught to apply this new skill to restructure unhelpful thoughts related to the traumatic event (Resick et al., 2008; Resick, Monson, et al., 2017). Because trauma processing involves recalling distressing information, many providers may prefer to hold off on interventions that include this element when a patient is deemed to have elevated risk factors for suicide. However, there are models of incorporating suicide-specific interventions into CPT to ensure that suicidality is a focus of treatment and thus being managed (e.g., Rozek & Bryan, 2020). Further, the current CPT manual (Resick, Monson, et al., 2017) lists several therapist "stuck points" involving patient readiness for treatment due to suicide risk despite the empirical evidence supporting the administration of CPT with ongoing suicidal ideation and/or behavior (e.g., Bryan et al., 2016; Rozek & Bryan, 2020). Although providers may desire to delay CPT administration to patients who are at risk of suicide, empirical evidence suggests that suicidal ideation reduces over the course of treatment with CPT (Bryan et al., 2016; Holliday et al., 2018; Stayton et al., 2019). However, the paucity of data on how suicide risk itself impacts treatment tolerance and outcomes may still be a barrier for treatment providers with regard to the wider adoption of CPT implementation for higher-risk patients.

To address the current gaps between science and practice, the present study aimed to evaluate the safety (i.e., the occurrence of suicidal behavior after treatment) and tolerability of (i.e., treatment completion) and response to (i.e., change in PTSD symptom severity) CPT among a sample of veterans with PTSD deemed to be at an increased risk (i.e., above low risk) of suicide. A secondary aim of the present analyses was to provide a clinically useful definition of acute suicide risk. We predicted that tolerability and safety of and response to CPT would not vary by suicide risk level.

Method

Participants

The present analyses were computed using information from a database of 290 veterans who engaged in outpatient CPT (i.e., attended at least one session) between January 2016 and December 2018 at the Salt Lake City (Utah, United States) VA. The full descriptive characteristics and study procedure can be found in previously published research from this database (Roberge et al., 2019). All study procedures were reviewed by the University of Utah Institutional Review Board. Veterans included in the present sample were predominantly male (n =256, 88.3%) and Caucasian (n = 253, 87.2%), with a mean participant age of approximately 44 years (SD = 13.68). All procedures and participant grouping described herein are specific to the present analyses.

Procedure

Two psychologists completed chart reviews of suiciderelated variables. Upon opening a veteran's electronic medical record, all notes entered between either the veteran's PTSD clinical team intake assessment or their PTSD clinic orientation and their first CPT session were selected to determine if the veteran reported current suicidal ideation. If this date was more than 1 year before their CPT appointment, the first date was chosen as 1 year prior to the first session date. The chart reviewers then searched for the keywords "ideation" and "SI" (i.e., suicidal ideation) within this selected date range, with all clinical notes from all specialties included in the search. Any documentation of any suicidal thoughts, varying from passive thoughts of wishing for death to desire, were coded as "yes" for the variable "current suicidal ideation."

Next, the team searched for "suicide attempt" in all notes in the medical record to determine if (a) any history of suicide attempts, including interrupted or aborted attempts, had been documented in the record and (b) if the veteran attempted suicide since their first session of CPT. The dates of patients' most recent suicidal ideation and attempts were recorded. Although the present analyses did not include remote VA or other medical records, community inpatient psychiatric unit admissions, suicide attempts, and suicide deaths would have been documented in these records if the veteran had registered with another VA in the interim. Interrater reliability analyses were conducted by selecting a random sample of 20% of the sample (n = 58) and having a graduate-level research associate check to ensure the presence of a prior suicide attempt and/or posttreatment suicide attempt, $\kappa = 93.8\%$.

Measures

Demographic Characteristics

Demographic information, including age, race/ethnicity, sex, and other variables, was gathered from the veterans' electronic medical records.

PTSD Symptom Severity

The severity of *Diagnostic and Statistical Manual of Mental Disorders* (fifth ed.; *DSM-5*) PTSD symptoms was assessed using the past-week version of the PTSD Checklist for *DSM-5* (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item, selfreport measure of past-week PTSD symptom severity. Items are rated on a scale of 0 (*not at all*) to 4 (*extremely*), with scores higher than 33 indicating a respondent has screened positive for PTSD. Further, clinically significant change is defined as changes of 10 or more points, whereas statistically significant change is considered a change of 5 points (Bovin et al., 2016). In the present sample, the internal consistency of the PCL-5 was adequate, Cronbach's $\alpha = .73$.

Suicide Risk Coding

Suicide risk was coded using two different methods to test the clinical validity of two conceptual approaches. In both coding approaches, veterans without a history of suicide attempts or recent and/or current suicidal ideation were categorized as "low risk," whereas those with a documented history of attempted suicide and recent and/or current ideation were categorized as "acute risk." The two coding approaches varied in the specificity of participants who reported either current suicidal ideation or a history of attempted suicide but not both. In

Table 1

Suicide Risk Coding Schemes

Scheme 1	Scheme 2
1. Low risk	1. Low risk
No history of suicide attempts (-)	No history of suicide attempts (-)
No current suicidal ideation (-)	No current suicidal ideation (-)
2. Elevated risk	2. Current suicidal ideation (+)
History of suicide attempt (+)	
or	
Current suicidal ideation (+)	
3. Acute risk	3. History of suicide attempt (+)
History of suicide attempt (+) <i>and</i>	
Current suicidal ideation (+)	
	4. Acute risk
	History of suicide attempt (+) <i>and</i>
	Current suicidal ideation (+)

Note. "--" indicates the lack of a characteristic; "+" indicates the presence of a characteristic.

the first approach (i.e., Scheme 1), informed by Franklin et al. (2017), individuals with current suicidal ideation but no history of attempted suicide, as well as those with a history of suicide attempts without current suicidal ideation, were combined into a group categorized as "elevated risk." The second approach (i.e., Scheme 2), consistent with the current VA/DoD algorithm (2019), separated these two groups of individuals such that those with current or recent suicidal ideation but no history of suicide attempts were ordinally ranked just above individuals in the low-risk group, followed by participants with a history of suicide attempts but no current or recent suicidal ideation, then those in the acute-risk group (see Table 1).

Provider CPT Training Level

Clinic therapists had varying levels of CPT training. Approximately 70% (n = 179) of the sample with a clinician who was both licensed and had completed the national rollout training. One clinician was licensed but had not attended the training (0.1%), 17.3% (n = 45) of the sample worked with providers who were not yet licensed but had attended the training, and 13.5% (n = 35) of participants worked with trainees who had not attended the training.

Treatment Safety

Treatment safety was defined as the absence of suicidal behavior (i.e., any suicidal behavior, including interrupted and aborted suicide attempts) during and after engagement in CPT.

Treatment Tolerability

Treatment tolerability was operationalized as one's ability to complete CPT. This was defined as participation in all 12 CPT, completion of the final session, and/or a provider's identification of a patient as an early responder and recommendation of early termination.

Time

Time was operationalized as the number of treatment sessions attended. Session 1 of treatment was centered as time = 0.

Data Analysis

Descriptive statistics, including demographic variables, baseline characteristics, and frequency of suicidal behaviors, were computed using SPSS (Version 25; See Table 1). Due to the lower observed frequency of posttreatment suicidal behavior, regression analyses were not appropriate. Instead, descriptive data are provided. To determine whether suicide risk impacted veterans' ability to safely tolerate CPT, binary logistic regressions were computed, with completion status as the outcome variable and risk categorization schemes as the predictors.

To compare the rates of symptom change between veterans over time, longitudinal growth analyses with restricted maximum likelihood estimation procedures were used and computed in HLM7 (Raudenbush et al., 2011). This modeling technique evaluates the rate of change over time for repeated measurements and allows for a comparison of change trajectories between people. In addition, this technique is robust to missing data at the assessment level (Raduenbush & Bryk, 2002; Jackson, 2010). A priori power analyses with clustered data and an expected average of six CPT therapy sessions per veteran were computed using G*Power (Faul et al., 2007). It was estimated that a minimum sample size of between 131 and 183 veterans was necessary to detect a small effect. Previous analyses determined that Level 1 data missingness was attributable to provider training level (Roberge et al., 2019); therefore, this variable was included as a covariate in the multilevel models. Level 1 data included patient-reported PCL-5 scores, provider training level, and the number of sessions attended, and Level 2 data included suicide risk group. Suicide risk group was tested as both a continuous variable and as a contrast-coded ordinal variable. The results of the models with suicide risk group as a continuous variable were used to compare suicide risk coding schemes, whereas contrast-coded suicide risk (i.e., C1 = low risk vs. acute risk; C2 = current suicidal ideation vs. history of suicide attempts; C3 = elevated risk vs. acute risk) was used to analyze specific group comparisons.

Multilevel models were constructed and evaluated in a series of steps. First, a baseline model was computed to estimate the between-person variance. Next, random-growth models (i.e., with intercepts and slopes allowed to vary between people) with linear effects of time were calculated (i.e., baseline symptomology and rate of symptom change were not assumed to be fixed). Then, the intercepts and slopes as outcomes models were calculated. Provider training level was added to the Level 1 equation, and suicide risk group variables were added as predictors of the Level 2 intercept and slopes. To compare model fit and determine if predictors significantly increased the amount of variability explained in the model, deviance estimates under full maximum likelihood were compared. As variables were added through each step of the multilevel modeling process, deviance estimates were reduced, suggesting improved fit and variance explained. D

Results

The average veteran who engaged in CPT screened well above the positive threshold for PTSD, with a mean PCL-5 score of 50.70 (SD = 13.77). Approximately 42% (n = 120) of the sample endorsed current suicidal ideation, and 22.5% (n = 65) of participants reported a history of attempted suicide.

Approximately 46% (n = 134) of veterans were categorized as low risk, and 10.0% (n = 29) of veterans were categorized as having an acute risk of suicide. Per the first categorization method, 43.4% (n = 126) of the sample was considered to be at an elevated risk. Using the second risk categorization method, 31.4% (n = 91) of participants endorsed current suicidal ideation but denied having a history of attempted suicide, whereas 12.1% (n = 35) of the sample endorsed a history of suicide attempts but denied current suicidal ideation. Therefore, most veterans who engaged in CPT were at increased risk for suicide as determined by empirically determined clinical factors. Veterans across suicide risk groups were of similar age and reported similar baseline symptomology, and women were equally distributed between the groups (see Table 2).

Treatment Safety

Three veterans (1.0%) engaged in suicidal behavior (i.e., suicide attempt) between treatment initiation and the chart review process (i.e., August 2020). Of these veterans, all endorsed suicidal ideation at the time of treatment initiation, and two had prior histories of suicide attempts. Two veterans' attempts occurred approximately seven months after CPT, whereas the other veteran's attempt occurred in the month following their first and only CPT session. According to local records, to date, no veterans who engaged in CPT between 2016 and 2018 have died by suicide.

Treatment Tolerability

In total, 122 (42.2%) of participants completed CPT. Suicide risk level was not a significant predictor of completion in Scheme 1, odds ratio (OR) = 1.38, SE = 0.19 p = .090, 95% CI [0.95, 1.97], or Scheme 2, OR = 1.24, SE = 0.13, p = .088, 95% CI, [0.97, 1.58]. Therefore, suicide risk level did not predict treatment tolerability, and the specificity of suicide risk determination did not improve predictive ability.

Table 2

Baseline Posttraumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5) Score, by Suicide Risk Group

Variable and suicide risk group	М	SD	п	%	р				
Scheme 1									
Age									
Low	43.75	14.25							
Elevated	43.58	13.38							
Acute	45.97	12.78							
F(2, 286) = 0.37					.691				
Female sex									
Low			13	12.5					
Elevated			19	19.6					
Acute			2	6.9					
$\chi^2(1, N = 289) = 2.60$.280				
Baseline PCL-5 score									
Low	47.47	13.88							
Elevated	53.61	12.74							
Acute	54.21	14.92							
F(2, 222) = 6.017					.003				
Scher	ne 2								
Age									
Low	43.75	14.25							
Current SI (no historical SA)	43.91	13.97							
Historical SA (no SI)	42.71	11.83							
Acute	45.97	12.78							
F(3, 285) = 0.31					.818				
Female sex									
Low			13	12.5					
Current SI (no historical SA)			11	12.1					
Historical SA (no SI)			8	22.9					
Acute			2	6.9					
$\chi^2(1, N = 289) = 5.37$.147				
Baseline PCL-5 score									
Low	47.47	13.88							
Current SI (no historical SA)	54.93	11.63							
Historical SA (no SI)	49.64	15.17							
Acute	54.21	14.92							
F(3, 221) = 5.019					.002				

Note. Some missing baseline PCL-5 data were observed. Total sample sizes for participants with baseline data are provided. Scheme 1: Low risk, n = 106; elevated risk, n = 100; acute risk, n = 19. Scheme 2: Low risk, n = 106, suicidal ideation (SI), n = 75; historical suicide attempt (SA), n = 25; acute risk = 19. *DSM-5 = Diagnostic and Statistical Manual of Mental Disorders* (5th ed.); SI = suicidal ideation; SA = suicide attempt.

Treatment Response

Next, to assess differences in baseline symptoms and treatment response trajectories, a series of multilevel models were created. The intraclass correlation coefficient from the baseline model suggested that 64% of PCL-5 score changes over time

were attributable to person-level characteristics, deviance = 13,561.14. Next, a series of random longitudinal growth models were created. First, a random longitudinal growth model with provider entered as a Level 1 covariate but without Level 2 predictors was created. The results of this model indicated that, on average, there was a significant negative reduction in PCL-5 score over the course of therapy, B = -1.60, p < .001; in addition, we observed significant variability in response trajectory between participants, $\chi^2(238, N = 2,361) = 984.21, p < .001$, deviance = 12,807.12. Next, we calculated two separate random growth models, with time and level of provider training entered as Level 1 predictors and risk categorization Schemes 1 and 2 entered as predictors of the intercept and slope. The results were identical across the two methods such that Time x Scheme interactions were not observed. Scheme 1: B = 0.31. p = .085, deviance = 12,803.57; Scheme 2: B = .24, p =.043, deviance = 12,810.14. In addition, models that included contrast-coded risk groups confirmed that, on average, veterans across treatment groups experienced similar rates of PTSD symptom change over the course of treatment (see Table 3 and Figure 1). These results indicate that a participant's level of suicide risk did not impact their response to CPT. A comparison of model deviance statistics between the random longitudinal growth model with covariates and the contrast-coded risk groups (i.e., C1, C2, C3) revealed that C1 and C2 improved model fit, whereas C3 did not (Table 3). This finding indicates that distinguishing low from acute risk (C1) and ideators from attempters (C2) explained significant variance in treatment outcomes, whereas the elevated and acute risk designations did not (C3).

Treatment Response Trajectory

Although treatment response trajectories were observed to vary significantly between veterans, $\chi^2(238, N = 2,361) =$ 997.37, p < .001, suicide risk categorization was not predictive of this variability, ps = .085-.976. When risk categorization was removed from the model, a steady 1.60-point average linear reduction in PCL-5 scores between sessions was observed over time. On average, veterans reported a statistically significant change in PCL-5 score by Session 7 (M = 6.58 cumulative reduction), and a clinically significant change was reported by Session 10 (M = 12.09 cumulative reduction). At Session 12, the average participant's PCL score was above the screening threshold, although not statistically significantly so (M =35.83, SD = 8.60).

Discussion

The primary goal of the present study was to evaluate the safety, tolerability, and reduction of PTSD symptoms among veterans with comorbid PTSD and increased suicide risk who participated in CPT. In total, 53% of the sample was determined to be at an increased risk for suicide. Although 68 veterans had documented histories of suicidal behavior (22.1%), and three

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Fixed effects	Low vs. acute risk (C1) ^a			Suicidal ideation vs. attempt $(C2)^{\flat}$			Elevated vs. acute risk (C3) ^c		
	В	SE	р	В	SE	р	В	SE	р
Level 1									
Intercept	50.09	1.83	< .001	48.80	1.41	< .001	48.56	1.56	< .001
Provider	0.09	0.07	.163	0.04	0.07	.521	0.10	0.07	.199
training									
Time	-1.46	0.13	< .001	-1.58	0.13	< .001	-1.60	0.13	< .001
Level 2									
Risk	-1.88	4.72	.691	9.31	3.98	.020	13.00	7.11	.069
Risk x	-0.28	0.21	.180	-0.05	0.15	.749	-0.57	0.31	.066
Provider									
Risk x Time	-0.62	0.36	.085	-0.15	0.38	.689	-0.01	0.50	.976

Results of Multilevel Rando	om-Growth Models Co	mparing Cog	nitive Processing	Therapy Outcom	es Between Sui	icide Risk Groups
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Note. Models compared to the longitudinal random-growth model with covariates. ^aModel comparison: Deviance = 12,795.32, $\chi^2(3, N = 2361) = 11.80, p = .003$. ^bModel comparison: Deviance = 12,798.76 $\chi^2(3, N = 2361) = 8.36, p = .015$. ^cModel comparison: Deviance = 12,803, $\chi^2(3, 2361) = 4.05, p = .130$.

(1.0%) engaged in suicidal behavior after initiating or completing CPT, according to local hospital records, no veterans who participated in CPT at the VA clinic from which study data were derived have died by suicide since 2016. These data support current clinical guidelines indicating that individuals who are at an increased risk of suicide, including those deemed to be at acute risk, can participate in CPT safely, although future treatment development should continue to focus on how to further reduce suicidal behavior (VA/DoD, 2019). In addition, suicide risk level did not differentiate between veterans who completed or did not complete CPT, indicating that this intervention is tolerable to patients at an increased risk for suicidal behaviors. Finally, significant negative linear reductions in PTSD severity were observed over time, with an average PCL-5

Figure 1

Table 3

Posttraumatic Stress Disorder Symptom Severity Change Trajectories, by Suicide Risk Group, for Cognitive Processing Therapy Completers



Note. PCL = Posttraumatic Stress Disorder Checklist; SI = suicidal ideation; SA = suicide attempt.

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score reduction of 1.60 points per session, and the rate of symptom reduction did not differ by suicide risk level. Indeed, veterans across suicide risk groups reported clinically significant reductions in PTSD symptom severity on average. Taken together, these results suggest that CPT is a safe treatment option for patients with low to acute suicide risk, and the severity of suicide risk does not impact patients' abilities to respond to or complete the treatment. This aligns with previous clinical trials of CPT that have shown that suicidal ideation decreases after CPT (Bryan et al., 2016, 2018; Holliday et al., 2018; Stayton et al., 2019); however, the present study expands the literature through its examination of how baseline suicide risk level impacts treatment safety, tolerability, and PTSD symptom reduction. This provides a clinically useful view, as many clinicians face this common problem (i.e., comorbid PTSD and increased suicide risk), especially in military veterans.

A secondary aim of the present study was to provide a clinically useful and empirically derived definition of high suicide risk. Two suicide risk categorization schemes were used and compared with regard to treatment tolerability and response analyses. Although there are a wide variety of paths to determine suicide risk level, these different coding schemes encompass the elements many clinical guidelines suggest using when assessing risk (for an overview see, Bernert et al., 2014). Across the analyses, neither scheme outperformed the other, suggesting that the more parsimonious scheme (i.e., low, elevated, acute risk) is clinically sufficient when capturing suicide risk.

Although the findings associated with the present data are consistent with and expand upon the larger body of literature, some interesting and unexpected lack of differences were observed. For example, both with and without a history of suicide attempts were equally represented across groups, and veterans with a history of suicide attempts were not younger than those without such histories. These findings are interesting when compared to well-documented patterns of higher suicidal ideation rates among women but higher rates of suicide attempts and deaths among men (U.S. Department of Health and Human Services, 2020). In 2018, the highest rates of suicide were reported among adults 45-54 years of age (AFSP, 2019). Although the average age of veterans across all suicide risk groups was approximately 44 years old, our data suggest that suicide attempts among the majority of veterans in this study occurred 5-50 years ago. This indicates that veterans in the present sample who had attempted suicide generally made these attempts when they were younger, and, consequently, would have been part of the age group that typically reports the lowest suicide risk (AFSP, 2018). This suggests that veterans may attempt suicide at younger ages than civilians.

The current study had several important strengths that lend themselves to clinical application. First and foremost, the current data are from an outpatient clinical sample, which increases the generalizability of the findings to clinical patients as opposed to those who meet the strict eligibility criteria of randomized controlled trials. Next, the longitudinal nature of our data from patients' electronic medical records allowed for the assessment of temporal associations between suicide risk and treatment outcomes over time. Further, documentation of suicide variables was not restricted to notes from the therapy providers. This was a crucial part of the study design, as many patients are reticent to disclose suicidal thoughts or behaviors (Hom et al., 2017), may respond differently depending on the questioning method (e.g., questionnaire, interview, directness of the question), and often seek mental health care from other types of health care providers (i.e., 79% of antidepressants are prescribed by primary care providers; Barkil-Oteo, 2013). As such, the current method increased the chances of detecting suicide risk. In addition, we addressed an important clinical and research question with our finding that current suicidal ideation and a history of suicide attempts are equally correlated with PTSD and depressive severity as well as with one's ability to tolerate and benefit from trauma-focused therapy.

However, the present study was not without limitations. Because suicide data were obtained from chart review, which included unstandardized documentation and definitions of suicidal ideation and attempts, heterogeneity in the experiences of individuals who report suicidal ideation and suicide attempts may have limited our ability to detect differences. For example, "suicide attempt" may have been documented in instances of suicide plan with intent without behavior, and "suicidal ideation" includes both passive thoughts (e.g., "I wish I could go to sleep and not wake up") and active desire without behavior (e.g., "I want to die to end this pain"). Standard definitions and documentation of such experiences would greatly impact both clinical utility and the ability to draw conclusions via research. In addition, the keyword search process we used for the electronic medical records could have missed documentation of suicidal ideation or attempts (e.g., if an individual moved to another region, was treated at a new VA facility, and made a suicide attempt after that transition). However, due to the fairly standard terminology required by the VA to document such experiences, this is unlikely. In addition, the low rate of suicide attempts observed in the present sample, while fortunate, limited our ability to test group differences in the occurrence of such behavior. This is a common limitation of suicide research, as suicidal behaviors are a low base-rate behavior. Further, remote VA data from other VA/DoD organizations outside of the Salt Lake City VA facility were not collected. However, it is likely that a lifetime history of documented suicide attempts was captured within the context of more recent clinical assessments and treatment. Moreover, the reliability of obtained data was restricted by patients' willingness to fully disclose such personal experiences. Finally, due to the characteristics of the present sample (i.e., veterans who participated in CPT), it is unclear how these findings relate to other trauma-focused therapies, nonveterans, or individuals receiving care in the community, where coordinated suicide prevention efforts may be less common.

Important clinical implications can be gleaned from the current study. First and foremost, the present findings indicate that veterans with PTSD at an increased risk for suicide can safely tolerate and benefit from trauma-focused therapy. Despite some recent support for the safety and tolerability of such interventions (e.g., Bryan et al., 2016; Rozek & Bryan, 2020), many clinicians and patients worry that individuals with suicidal ideation or a history of suicide attempts "cannot handle" trauma-focused therapy or that it will "trigger a suicidal crisis." Rather, we argue that withholding trauma-focused therapy from individuals whose suffering is largely due to their PTSD symptoms is contraindicated and reinforces thoughts of hopelessness and poor self-esteem that contribute to one's risk for death by suicide. For individuals who are deemed to be at an elevated risk of suicide, it is likely important to target negative cognitions related to suicidal ideation and/or behavior. Although there will be overlap in these negative suicidal cognitions and cognitions related to PTSD, ensuring that both are addressed in treatment may be helpful in improving outcomes and reducing overall risk. This could lead to the development of a CPT for suicide (i.e., CPT-S) intervention that includes explicit instructions regarding how to target suicidality. However, an additional educational component during the dissemination of CPT (i.e., an educational process for therapists) may also provide the foundation that both PTSD and suicidality can be managed in CPT. Another option is to integrate suicidespecific interventions into CPT. Preliminary models show that integrating a suicide safety plan or crisis response plan into CPT can be effective while maintaining fidelity to both interventions (Rozek & Bryan, 2020). This integration prioritizes the discussion of suicide risk and coping strategies at each session. This model may be appealing to clinicians, as it incorporates best practices for suicide prevention (i.e., safety planning) with an established, evidence-based treatment for PTSD. Larger clinical trials should examine best practices related to this integration and evaluate whether this type of combination can improve the likelihood of treatment completion, reduce patient suffering, and/or reduce provider anxiety related to treating higher-risk suicidal individuals with PTSD. Although CPT and other evidence-based therapies for PTSD are often associated with diagnostic remission following the completion of the treatment protocol, approximately 30%-50% of patients do not complete these treatments (Gutner et al., 2016; Imel et al., 2013; Roberge et al., 2019). However, post hoc predictors of noncompletion have been inconclusive, and research aimed at directly assessing the reasons for dropout from trauma-focused therapies is lacking. Although poor tolerability may explain treatment dropout, other potential explanations remain, including poor treatment fit (e.g., veterans' goals in seeking therapy are not aligned with goals of CPT, nonpreference for cognitive behavioral therapeutic approach), competing demands and needs (e.g., family, work, unstable housing), and not being in the "action" phase of change. Noncompletion of trauma-focused therapy remains a critical area for future research and clinical attention.

In addition, our findings have implications for the understanding and categorization of suicide risk such that there appears to be no additional utility in differentiating between patients with current suicidal ideation but without a history of suicide attempts from those without current suicidal ideation but with a history of suicide attempts. It is important to note that this finding again highlights all that the field does not know about how to predict suicidal behavior. One significant risk factor that remains unclear and warrants future investigation is how to incorporate a previous history of attempted suicide. For instance, the VA/DoD risk categorization algorithm (2019) includes the presence of at least one lifetime suicide attempt, along with the presence of several other co-occurring risk factors, as necessary to warrant a high chronic risk designation. The presence of a recent suicide attempt is necessary to meet the risk criteria for the high-level acute risk group. There is a significant amount of empirical evidence demonstrating that prior suicide attempts are significant risk factors for future suicide attempts (Andover et al., 2008; Kuehn et al., 2020; Irigoyen et al., 2019); however, there is a gap in the literature regarding how to evaluate the importance of the recency of the attempt as it relates to suicide current risk. That is, at what point is a suicide attempt no longer "recent?" For example, it would not be uncommon for a provider to consider risk level differently when evaluating an individual who attempted suicide 20 years ago and displays no current suicidal ideation or relevant acute risk factors for suicide versus a patient who has attempted suicide within the past year but displays none of the current acute suicide risk factors.

However, several important areas for future inquiry remain. One such area requisite of additional clinical and research attention lays in the identification of individuals who are at acute risk for suicidal behavior. In the present sample, the participants in the acute risk group in both Scheme 1 and Scheme 2 reported PTSD symptom levels equal to those reported by individuals in the moderate risk categories. The identification of variables that predict the transition from suicidal thoughts to action is the primary goal of suicide research within the context of the ideation-to-action framework (i.e., interpersonal theory of suicide [Joiner] and the fluid vulnerability theory [Rudd, 2006]). Further, current suicide risk stratifications from VA differentiate between individuals with an acute or chronic risk for death by suicide. Upon close examination, the primary differentiating factor between acute and chronic risk is access to means with which one can carry out a suicide and acute psychosocial stressors, which is consistent with the fluid vulnerability theory (Rudd, 1996). Future investigations should explicitly assess the role of access to means and acute psychosocial stressors in suicide behavior. Together, the present findings, existing theories of suicide, and current guidelines should reassure clinicians that initiating trauma-focused therapy for individuals at an increased risk for suicide can be done safely for most patients with histories of suicide attempts and/or current suicidal ideation.

Open Practices Statement

The study reported in this article was not formally preregistered. Neither the data nor the materials have been made available on a permanent third-party archive, and posting of the data has not been approved by our institutional review board. Requests for the data or materials should be sent via email to the lead author at Erika.Roberge@va.gov.

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