SUICIDE COGNITIONS AMONG VETERANS: A CONSTRUCT FOR ASSESSMENT

AND INTERVENTION

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DEDICATION

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Military veterans represent a population that is more likely to be exposed to traumatic events and therefore diagnosed with posttraumatic stress disorder (PTSD) compared to civilian men and women. Military sexual trauma (MST) is a traumatic event endorsed by approximately 28% of women veterans and 1.5% of male veterans. Not only are survivors of MST more likely to be diagnosed with PTSD than survivors of other traumas, they are also at risk for significant psychosocial consequences and comorbid psychiatric diagnoses. Of particular significance, veterans with MST-related PTSD report increased suicidal ideation and report higher incidences of suicidal self-directed violence (SDV).

The Veterans Health Administration (VHA) has placed emphasis on both screening for MST and suicide prevention efforts. As a result, providers within the VHA have a greater opportunity to provide clinical care to a vulnerable population. However, research is mixed regarding whether veteran survivors of MST are more or less likely to utilize health care services within the VHA. Women veterans who have experienced MST in particular have been found to be less likely to utilize VHA health care services.

This dissertation sought to increase understanding of suicide cognitions as a construct for assessment as well as potential treatment-seeking barriers and consists of two studies, each a secondary analysis of an RCT examining the efficacy of CPT in treating MST-related PTSD. The aim of the first study was to evaluate the psychometric properties of the SCS and identify the optimal factor structure. A four-factor structure was identified and the SCS was psychometrically valid in this sample. The purpose of the second study was to investigate whether suicide cognitions predict greater or lesser medical and mental health care utilization among female veterans with MST-related PTSD. Both logistic regression analyses and hierarchical multiple linear regression analyses were conducted to identify whether SCs predict medical (inpatient and outpatient) and mental health (inpatient and outpatient) care utilization. Decreased physical health concerns and unbearability predicted inpatient medical care utilization. These studies provide additional support for how SCs can be utilized to improve assessment of suicide risk, as well as inform clinical approaches.

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LIST OF DEFINITIONS

BDI-II	Beck Depression Inventory-II
CPT	Cognitive Processing Therapy
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision
MST	Military Sexual Trauma
PTSD	Posttraumatic Stress Disorder
RCT	Randomized Controlled Trial
SCs	Suicide Cognitions
SCS	Suicide Cognitions Scale
SDV	Self-directed violence
STAXI	State Trait Anger Expression Inventory
QIDS-SR$_{16}$	Quick Inventory of Depressive Symptomatology, Self-Report Version

CHAPTER ONE
Introduction

Posttraumatic Stress Disorder (PTSD) in Veterans

The current version of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) included revisions to the diagnostic definition of posttraumatic stress disorder (PTSD), including an expansion of symptom criteria and restricting the definition of a qualifying traumatic experience (i.e., criterion A; American Psychiatric Association [APA], 2013; Pai, Surís, & North, 2017). A qualifying traumatic event is defined as actual or threatened death, serious injury, or sexual violence experienced in one or more of the following situations: directly experiences the traumatic event, witnesses traumatic event in person, learning that a close family member or friend experienced a traumatic event, and repeated or extreme exposure to aversive details of a traumatic event (APA, 2013). Following a qualifying traumatic event, a larger pattern of symptoms that are temporally and contextually linked to that traumatic event must be present for at least one month (APA, 2013; Pai, Surís, & North, 2017). These symptoms as defined in DSM-5 include intrusion, avoidance, negative alterations in mood and cognitions, and arousal, and must result in clinically significant distress or social, occupational, or functional impairment (APA, 2013). A population that is disproportionately affected by PTSD is military veterans. Men and women veterans are more likely to be exposed to a traumatic event compared to civilian men and women (Lehavot, Katon, Chen, Fortney, & Simpson, 2018), specifically combat and military sexual trauma (MST) being frequently endorsed risk factors for developing PTSD

(Jakob, Lamp, Rauch, Smith, & Buchholz, 2017; Sexton, Raggio, McSweeney, Authier, &
Rauch, 2017; Surís & Lind, 2008).

PTSD and Suicide Risk for Veterans

Veterans who have been diagnosed with PTSD report more suicidal ideation and
suicidal self-directed violence (SDV) compared to veterans who are not diagnosed with
PTSD (Jakupcak et al, 2009; Lemaire & Graham, 2011; Pietrzak et al., 2010; Schry et al.,
2015). Further, veterans were found to have a suicide rate 50% greater than non-veteran
adults (Department of Veterans Affairs, 2018). Veteran death by suicide has become a
national public health concern and priority within the Veterans Health Administration
(VHA). Recent data indicates that between 2005 and 2016 there was a slower increase of
suicide rate for veterans receiving care within the VHA than for veterans not receiving care
within the VHA (13.7% vs. 26.0%; Department of Veterans Affairs, 2018). It is important to
note that this report also shows a higher rate of suicide for veterans receiving care within the
VHA compared veterans receiving care elsewhere, however it is probable that this is due to
improved ability to track and follow veterans' health trajectories if they are engaged in care
at the VHA.

Limitations in Current Understanding and Proposed Studies

Veteran survivors of MST are differentially inclined to utilize mental and medical
health care services within the VHA. Research has been mixed regarding whether veterans
with MST-related PTSD are utilize healthcare services more or less than veterans who did
not experience MST (Kelly et al., 2008; Maguen et al., 2012; Ryan et al., 2015; Surís, Lind,
Kashner, Borman, & Petty, 2004; Turchik et al., 2012). Additionally, women veterans have

been found to be less likely to use VHA health care services compared to male veterans (Yano et al., 2007). In one study by Calhoun and colleagues (2016), almost half of the women veterans who reported experiencing MST had not used VHA health care services. Understanding potential barriers for veterans with MST-related PTSD to seek health care services within the VHA, specifically women veterans, is an important task for providing appropriate interventions and services to an at-risk group.

This dissertation seeks to enhance understanding of suicide cognitions, both as a means of suicide risk assessment and as a factor that influences treatment-seeking behaviors among veterans with MST-related PTSD. The dissertation consists of two studies that will be secondary analyses of data collected during a randomized clinical trial evaluating the effectiveness of Cognitive Processing Therapy in treating MST-related PTSD (Surís, Link-Malcolm, Chard, Ahn, & North, 2013). The first study investigated the psychometric properties of the Suicide Cognitions Scale (SCS; Rudd et al., in press) and determine the optimal factor structure. To achieve these aims, an exploratory factor analysis was conducted and internal consistency reliability, convergent validity, and discriminant validity were evaluated comparing the SCS to the Quick Inventory of Depressive Symptomatology, Self-Report Version (QIDS-SR16; Rush et al., 2003), Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), and the State Trait Anger Expression Inventory (STAXI; Spielberger, 1988).

The aim of the second study was to identify whether SCs predict greater or lesser medical and mental health care utilization by women veterans with MST-related PTSD. To accomplish this study's aim, logistic regression analyses were conducted to identify if SCs

predict whether or not women veterans utilized medical (inpatient and outpatient) and mental health (inpatient and outpatient) care. Additionally, hierarchical linear regression analyses were conducted to evaluate whether SCs predict greater or lesser amounts of medical (inpatient and outpatient) and mental health (inpatient and outpatient) care. These two studies will enhance understanding of suicide cognitions as a measure for risk assessment and influencing health care utilization for veterans with MST-related PTSD.

CHAPTER TWO
Study I

A FACTOR ANALYSIS OF THE SUICIDE COGNITIONS SCALE IN VETERANS WITH MILITARY SEXUAL TRAUMA-RELATED POSTTRAUMATIC STRESS DISORDER

Abstract

The Veterans Health Administration has prioritized suicide prevention efforts in attempts to combat the steadily increasing rate of veterans who die by suicide. Veterans with military sexual trauma-related posttraumatic stress disorder (MST-related PTSD) are at elevated risk for suicidal self-directed violence (SDV) compared to veterans who did not experience MST. Understanding what factors increase an individuals' risk for future suicidal SDV is a critical element of suicide risk assessment. The Suicide Cognitions Scale (SCS) assesses suicide-specific cognitions, although previous research has been mixed regarding whether a two-factor or three-factor structure best fits the SCS. Further, this measure has not been validated for use with veterans with MST-related PTSD. This study sought to determine the optimal factor structure of the SCS for use with veterans with MST-related PTSD as well as examine the psychometric properties of this measure. The exploratory factor analysis revealed a four-factor structure to best fit, including unlovability, unbearability, unsolvability, and negative urgency. The SCS also demonstrated excellent internal consistency, good convergent validity, and good divergent validity. This study supports the use of the SCS as a clinical tool that can aid in evaluating risk for suicidal SDV among veterans with MST-related PTSD.

Introduction

According to a recent report by the U.S. Department of Veterans Affairs (VA), the veteran suicide rate was 50% greater than civilians in 2016 (VA, 2018), and suicide prevention efforts have accordingly become a significant priority for the Veterans Health Administration (VHA). However, the current understanding of risk and resilience factors that influence a veterans' susceptibility to suicidal self-directed violence (SDV) has not significantly changed in the past 50 years (i.e., previous suicidal SDV, suicidal ideation, psychiatric diagnoses). Research suggests that veterans with military sexual trauma-related posttraumatic stress disorder (MST-related PTSD) are at elevated risk to report suicidal ideation and die by suicide (Kimerling, Gima, Smith, Street, & Frayne, 2007; Kimerling, Makin-Byrd, Louzon, Ignacio, & McCarthy, 2016). There is a need for greater understanding of factors that increase veterans with MST-related PTSD risk for suicidal SDV.

The Suicide Cognitions Scale (SCS; Rudd et al., in press) is a measure designed to assess suicide-specific cognitions and is theoretically rooted in the *fluid vulnerability theory* (FVT; Rudd, 2006) that describes suicide risk as a process that fluctuates over time. According to FVT, acute risk for suicidal SDV occurs within a *suicidal mode* (Rudd, 2006; Bryan & Rudd, 2016) and involves interactions among both static (i.e., gender, race) and dynamic (i.e., life stressors, mood) risk and protective factors (Rudd, 2006). The suicidal mode is comprised in part by a suicide belief system (i.e., suicide cognitions) that contributes to an individuals' baseline level of suicide risk (Rudd, 2006; Bryan & Rudd, 2016). Rudd theorized that suicide cognitions would primarily fall along the lines of four themes (i.e.,

unlovability, helplessness, poor distress tolerance, and perceived burdensomeness) and these themes provided the basis for the development of the SCS (Rudd, 2006; Rudd et al., in press).

Research suggests that suicide cognitions may be better predictors of future suicidal SDV than suicidal ideation or previous suicidal SDV as they provide insight into cognitions germane to imminent risk (i.e., suicidal ideation) as well as a more chronic pattern of thought regarding suicidal SDV (i.e., SCs; Bryan et al., 2014; Bryan et al., 2017; Bryan & Rudd, 2016; Rudd, 2006). Improving the understanding of the SCS and the suicide-specific cognitions it assesses could improve clinicians' abilities to not only accurately assess suicide risk, but also address suicide-specific cognitions during treatment.

Previous research is mixed regarding whether a two-factor (i.e., unlovability and unbearability; Bryan et al., 2014) or a three-factor (i.e., unlovability, unbearability, and unsolvability; Ellis & Rufino, 2015; Bryan et al., 2017) model best fits the SCS. Additionally, the psychometric properties of this scale have yet to be examined in a sample of veterans with MST-related PTSD. Given that this population experiences higher rates of suicidal SDV compared to veterans who do not experience MST (Blais & Monteith, 2018; Monteith et al., 2016; Schry et al., 2015), investigating the psychometric properties of the SCS may provide clinicians with better-defined targets for intervention to reduce suicidal SDV in veterans with MST-related PTSD.

Method

Participants

The current study is a secondary analysis of data collected during a randomized clinical trial (RCT) evaluating the effectiveness of Cognitive Processing Therapy (CPT) in treating MST-related PTSD (Surís, Link-Malcolm, Chard, Ahn, & North, 2013). Veterans ($n = 129$) were recruited from a large, southwestern Veterans Affairs Medical Center via posted advertisements, recruitment letters, and clinician referral. The study was approved by the local Institutional Review Board and each veteran provided informed consent before participation. Inclusion criteria were: 1) veteran status with a diagnosis of MST-related PTSD; 2) MST occurred at least 3 months before baseline assessment; 3) at least one clear memory of the MST; and 4) psychiatric medications were unchanged in the 6 weeks before baseline assessment. Exclusion criteria were: 1) substance dependence/abuse in the 3 months before baseline assessment; 2) current psychotic symptoms; 3) unstable bipolar disorder; 4) severe cognitive impairment; 5) concurrent enrollment in a psychotherapy for PTSD; 6) involvement in a violent intimate partner relationship; and/or 7) suicidal/homicidal intent warranting immediate intervention.

Measures

Suicide Cognitions Scale (SCS; Rudd et al., in press). The SCS is an 18-item self-report questionnaire that is rated on a 5-point scale, ranging from 1 (disagree strongly) to 5 (agree strongly), and is summed to obtain scores ranging from 18-90. The SCS was designed to measure suicide-specific cognitions and beliefs and includes items such as "I can't stand this pain any more," "Nothing can help solve my problems," and "The world would be better

off without me." Previous research has found both two-factor (i.e., unlovability and unbearability; Bryan et al, 2014; Rudd et al., in press) and three-factor (i.e., unlovability, unbearability, and unsolvability; Ellis & Rufino, 2015; Bryan et al., 2017) models best fits the SCS in both clinical and nonclinical populations. The SCS has been found to have strong internal consistency (Cronbach's alpha = .95-.97) and concurrent validity with measures of hopelessness (Beck Hopelessness Scale, r = .68), depression (Patient Health Questionnaire-9, r = .41), and suicidal ideation (Beck Scale for Suicidal Ideation, r = .62) (Bryan et al., 2014; Bryan et al., 2017; Ellis & Rufino, 2015; Rudd et al., in press). The SCS has been found to have moderate test-retest reliability (r = .46-.54), which is reasonable given the theoretical underpinnings of the SCS as a measure of fluid suicide risk (i.e., both state and trait risk/protective factors).

   Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report measure that assesses depression symptom severity. Responses on each item range from 0 (no report of symptomatology) to 3 (report of severe symptomatology) and participant ratings are summed to obtain scores ranging from 0 to 63; higher scores indicate greater depressive symptom severity. Research indicates three latent symptom factors that may be used as an alternate means of interpreting the scale (Quilty, Zhang, & Bagby, 2010; Ward, 2006). The three latent factors are described as a General Depression factor ("G"), a somatic factor ("S"), and a cognitive factor ("C") (Quilty, Zhang, & Bagby, 2010; Ward, 2006). The G factor is comprised of a total score of all items; the S factor is comprised of five items; and the C factor is comprised of 8 items. The BDI-II is used widely in research

and clinical settings, and has been found to have strong psychometric properties (Beck &

Steer, 1987; Beck, Steer, & Brown, 1996).

Quick Inventory of Depressive Symptomatology-Self Report 16 item Version (QIDS-

SR$_{16}$; Rush et al. 2003). The QIDS-SR$_{16}$ is a 16-item self-report measure that assesses

depression symptom severity. Responses for each item range from 0 (no report of

symptomatology) to 3 (report of severe symptomatology), with total scores ranging from 0-

27; higher scores indicate greater depressive symptom severity. The QIDS-SR$_{16}$ has strong

concurrent validity to measures of depression and strong internal consistency (Cameron et

al., 2013; Reilly, MacGillivray, Reid, & Cameron, 2015; Rush et al., 2003). Further, this

measure has been validated for use in veterans with military-related PTSD (Surís, Holder,

Holliday, & Clem, 2016).

State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988). The STAXI is a

44-item self-report measure comprised of five subscales that measure State Anger, Trait

Anger, Anger Expression (internal and external), and Anger Control (internal and external).

The STAXI utilizes a four-point Likert-type scale from "almost never" to "almost always."

The STAXI has been found to have strong psychometric properties, including high internal

consistency (.93 for State Anger; .86 for Trait Anger) and construct validity when compared

to other measures of anger and hostility (Bishop & Quah, 1988; Forgays, Forgays, &

Spielberger, 1997; Spielberger, 1988).

A sociodemographic questionnaire was used to assess age, years of education, gender, racial-

ethnic self-identification, marital status, and PTSD-related service connection.

Procedure

Veterans participated in a baseline assessment that included the administration of the SCS, BDI-II, QIDS-SR$_{16}$, a sociodemographic form, and additional study measures (see Surís et al., 2013 for additional details about other measures). Eligible veterans were then randomized into CPT or Present Centered Therapy (PCT) and participated in 12 1-hour individual psychotherapy sessions. The version of CPT utilized in this RCT included a written trauma account, which is now referred to as "CPT+A" per Resick et al. (2017).

Analytic Plan

An exploratory factor analysis was conducted to determine the optimal factor structure of the SCS using a maximum likelihood method and promax rotation (Fabrigar, Wegener, MacCallum, & Strahan, E. J., 1999). The number of factors was determined by examination of the Scree plot, number of eigenvalues ≥ 1, and a parallel analysis. Factor loadings $\geq .3$ were used to determine which items on the SCS loaded onto which factors (Tabachnik & Fidell, 2013).

Internal consistency reliability was assessed using Cronbach's alpha and convergent validity was evaluated using Pearson's correlation coefficients, comparing the SCS to the QIDS-SR16 and the three component scores of the BDI-II (i.e., G, S, and C). Divergent validity was assessed using Pearson's correlation coefficients, comparing the SCS to the STAXI subscales (i.e., State Anger, Trait Anger, Anger Expression internal, Anger Expression external, Anger Control internal, and Anger Control external. All statistical analyses were conducted using SPSS (IBM Corp. 2013), with the parallel analysis conducted using syntax developed by O'Connor (2000).

Results

Sample Characteristics

The sample included for factor analysis and convergent validity was 130. Three participants (2.3%) were missing STAXI data and therefore the sample included for divergent validity was 127. The sample was predominantly female (n = 116, 89.1%) and self-identified as Black, non-Hispanic (n = 56, 43.1%) or White, non-Hispanic (n = 51, 39.2%). The mean age was 45.7 years (SD = 9.3) and the mean number of years of education was 14.25 (SD = 2.87). Sociodemographic information for this sample is described in further detail in Table 1.

Factor Anlaysis

The Kaiser-Meyer-Olkin measure of sampling adequacy was .888, above the recommended value of .6, and Bartlett's test of sphericity was significant, $\chi^2(153) = 1473.20$, $p < .0001$, both results indicating that sample size was sufficient for factor analysis. Examination of the diagonals of the anti-image correlation matrix also found correlation among individual items that was strong enough to conduct a factor analysis (scores >.70). Kaiser's criterion suggested four factors (i.e., four eigenvalues were found to be greater than or equal to 1) and visual inspection of the Scree plot also indicated 4 factors. The parallel analysis only indicated 2 factors; however, given the congruence of Kaiser's criterion and the Scree plot, four factors was determined to be the best fit for the SCS within this sample. The first factor explained 45.27% of the variance; the second factor explained 9.91% of the variance; the third factor explained 8.20% of the variance; and the fourth factor explained 6.36% of the variance. All items had factor loadings ≥ .3 (see Table 2).

Reliability and Validity

Internal consistency for the SCS was excellent as indicated by Cronbach's alpha (α = .93). Convergent validity was assessed using Pearson's bivariate correlations between the SCS and the QIDS-SR$_{16}$ and the three component scores of the BDI-II. Significant and positive correlations were found between the SCS and QIDS-SR$_{16}$ (r = .54, p < .001), BDI-II G subscale (r = .68, p < .001), BDI-II S subscale (r = .40, p < .001), and BDI-II C subscale (r = .71, p < .001) (see Table 4). Divergent validity was assessed comparing the SCS to the six STAXI subscales (i.e., State Anger, Trait Anger, Anger Expression internal, Anger Expression external, Anger Control internal, and Anger Control external). Several STAXI subscales were found to have weak, positive correlations including State Anger (r = .38, p < .001), Trait Anger (r = .35, p < .001), Anger Expression internal (r = .26, p < .01), Anger Expression external (r = .27, p < .01). Two subscales were found to have weak, negative correlations with the SCS: Anger Control internal (r = -.32, p < .001) and Anger Control external (r = -.30, p < .001) (see Table 4).

Discussion

The present study sought to increase understanding of risk factors for suicidal SDV within a sample of veterans with MST-related PTSD by investigating the SCS, a measure designed to assess suicide-specific beliefs. Although previous research has found either a two- or three-factor solution to best fit the SCS (Bryan et al., 2014; Rudd et al., in press; Ellis & Rufino, 2015; Bryan et al., 2017), the results of this exploratory analysis indicated a four-factor solution (see Table 2). The factors previously identified as unlovability and unbearability were replicated exactly within this sample. The factor previously identified as

unsolvability was reduced to only 2 items in this study, with the remaining items defining a fourth factor.

While this result may be surprising given previous research on the SCS, it can be considered aligning quite closely with the theoretical underpinning for the SCS. Within FVT, Rudd theorized that suicide-specific cognitions would primarily be within four cognitive themes (i.e., unlovability, helplessness, distress tolerance, and perceived burdensomeness) and that these cognitions typify the suicidal mode when acute risk is greatest (Rudd, 2006; Bryan & Rudd, 2016). While the three established SCS factors (i.e., unlovability, unbearability, and unsolvability) can be clearly understood as falling in line with Rudd's original themes of unlovability, poor distress tolerance, and helplessness respectively, the fourth factor found in this study does not quite fit with the last theorized theme, perceived burdensomeness. In considering the items on the fourth factor, there appears to be more of a sense of immediacy or action related to poor distress tolerance or emotion dysregulation and this fourth factor is therefore described as "Negative Urgency."

Negative urgency refers to the impulse to act quickly in the service of decreasing negative affect, often without consideration for long-term consequences of those actions (Anestis & Joiner, 2011; Whiteside and Lynam, 2001). Negative urgency has been found to be a risk factor for nonsuicidal self-injury, substance use, as well as disordered eating behaviors (Dir, Karyadi, & Cyders, 2013). Research has also found that increases in negative urgency and psychological agitation also increases the risk for suicidal SDV (Anestis, Bagge, Tull, & Joiner, 2011; Anestis & Joiner, 2011; Rogers, Ringer, & Joiner, 2016). Although

related to poor distress tolerance and emotion dysregulation, negative urgency as a concept goes a step further and addresses a behavioral aspect that may be a critical link when viewing suicidal SDV within an ideation-to-action framework (Klonsky & May, 2014; Klonsky, Saffer, & Bryan, 2018). While SCs may place an individual at elevated risk for suicidal SDV, it may not be enough to shift an individual from ideation to action, and it is here where negative urgency may help explain the predictive ability of the SCS found in previous research (Bryan et al., 2014; Bryan et al., 2017; Bryan & Rudd, 2016).

Regarding the psychometric properties of the SCS, the results were found to be largely in line with initial hypotheses. Internal consistency reliability was found to be excellent, and there were moderate, positive correlations found between the SCS and the QIDS-SR$_{16}$ and BDI-II S subscale. Strong positive correlations were also found between the SCS and the BDI-II G subscale and BDI-II C subscale, with the C subscale having the strongest correlation. The correlations between the STAXI subscales and SCS, although statistically significant, were found to be weak and therefore suggest discriminant validity between the two scales.

There are several limitations in the current study and the results should be considered preliminary in part due to the exploratory nature of the analyses. Although the sample size was found to be adequate to conduct the factor analysis, replication in a larger sample of veterans with MST-related PTSD would be beneficial. Additionally, this sample was primarily female; identified as White or Black; and only included veterans with MST-related PTSD. These factors may limit generalizability as male veterans with MST-related PTSD,

veterans who identify as a racial-ethnic background other than White or Black, and those with other index traumas may have different risk factors for suicidal SDV. Future research should endeavor to include a more diverse, inclusive sample with different trauma types. Lastly, due to safety concerns in the original RCT, veterans who were expressing active suicidal intent were not included and the results should be considered with this in mind.

The SCS is a measure that has been validated for use in several populations and has also been shown to have predictive power for future suicidal SDV above previously identified risk factors. The current study identified a novel factor within a sample of veterans with MST-related PTSD, negative urgency. This factor may add to the predictive abilities previously found and potentially increase clinician ability to differentiate between individuals with suicidal ideation and individuals who are at elevated risk for suicidal SDV.

CHAPTER THREE
Study II

SUICIDE COGNITIONS AS PREDICTORS OF HEALTH CARE UTILIZATION AMONG WOMEN VETERANS WITH MILITARY SEXUAL TRAUMA-RELATED POSTTRAUMATIC STRESS DISORDER

Abstract

Women veterans with military sexual trauma-related posttraumatic stress disorder (MST-related PTSD) are more likely to report greater depression and PTSD symptom severity, as well as be at elevated risk for suicidal self-directed violence (SDV) when compared to women veterans with other trauma histories and male veterans with MST-related PTSD. Unfortunately, women veterans with MST-related PTSD also report numerous barriers to seeking medical and mental health treatment. Given the increased risk for suicidal SDV among this population, understanding how suicide-specific cognitions (SCs) interact with beliefs related to treatment seeking is critical. It is possible that SCs (i.e., unlovability, unbearability, unsolvability, and negative urgency) influence whether a women veteran will access health care services. The current study investigated whether SCs influenced the utilization of medical and mental health care services by women veterans with MST-related PTSD. When assessed dichotomously, the model predicting inpatient medical care was significant and included the Physical Health Composite score and unbearability as predictors that were approaching significance. This study provides preliminary results to suggest an

interaction between treatment-seeking beliefs and SCs that can be evaluated in future

research.

Introduction

Veterans who are diagnosed with posttraumatic stress disorder (PTSD), depression, or

both are likely to be greater utilizers of health care services (Chan, Cheadle, Reiber, Unützer,

& Chaney, 2009; Maguen et al., 2012; Zinzow, Grubaugh, Monnier, Suffoletta-Maierle, &

Frueh, 2007); however, previous research is inconclusive regarding levels of service

utilization by women veterans. Some research indicates that women veterans are greater

utilizers of health care services compared to male veterans (Kelly et al., 2008; Maguen et al.,

2012; Turchik, Pavao, Hyun, Mark, & Kimerling, 2012). Others have found that women

veterans with military sexual trauma-related PTSD (MST) are less likely to utilize health care

services compared to those who did not experience MST (Ryan, McGrath, Creech, &

Borsari, 2015; Surís, Lind, Kashner, Borman, & Petty, 2004).

Understanding what influences an individual's decision to seek treatment and utilize

health care services is a particularly important public health concern for this population. Not

only has MST been shown to have significant psychosocial consequences, including higher

rates of PTSD and depression (Kimerling, Gima, Smith, Street, & Frayne, 2007; Sadler,

Booth, Nielson, & Doebbeling, 2000; Surís & Lind, 2008; Surís, Link-Malcolm, Chard, Ahn,

& North, 2013; Williamson, Holliday, Holder, North, & Surís, 2017), but women veterans

with MST-related PTSD are more likely to report suicidal ideation (SI) and are at greater risk

for suicidal self-directed violence (SDV) compared to women veterans with other trauma

histories and male veterans with MST-related PTSD (Blais & Montieth, 2018; Kimerling, Makin-Byrd, Louzon, Ignacio, & McCarthy, 2016; Monteith et al., 2016).

The reasons why women veterans with MST-related PTSD access care less frequently than women veterans without MST is unclear. It has been hypothesized that veterans who experience MST are less likely to utilize health care services due to concerns about stigma, perceptions of health care quality, as well as beliefs about VA providers not being gender-sensitive (Kimerling et al., 2011; Monteith et al., 2018; Vogt, 2011; Washington, Bean-Mayberry, Riopelle, & Yano, 2011). Stigma-related beliefs and feelings such as shame, concerns about being perceived as weak, or fears of retaliation have also been shown to increase depression and PTSD symptom severity (Holland, Rabelo, & Cortina, 2016). Further, women veterans report a sense of thwarted belongingness within their social network and within the VHA. (Jones & Hanley, 2017; Monteith, Bahraini, & Menefee, 2017). When considered concurrently, these negative cognitions about self, others, and the world likely present significant barriers to women veterans accessing the health care they need.

These negative cognitions are important when considering the elevated risk of psychiatric issues and SI among this population. Women veterans who hold these negative beliefs may also report suicide cognitions such as unbearability, unlovability, unsolvability, or negative urgency. A greater understanding of women veterans' suicide cognitions (SCs) and their relationship to medical and mental health treatment utilization is important given that this could be an important point of intervention. The purpose of the current study is to

investigate whether specific SCs influence women veterans' utilization of medical and mental health care.

Method

Participants

The current study is a secondary analysis of data collected during a randomized clinical trial (RCT) evaluating the effectiveness of Cognitive Processing Therapy (CPT) in treating MST-related PTSD (Surís et al., 2013). Female veterans ($n = 114$) were recruited from a large, southwestern Veterans Affairs Medical Center via posted advertisements, recruitment letters, and clinician referral. The study was approved by the local Institutional Review Board and each veteran provided informed consent before participation. Inclusion criteria were: 1) veteran status with a diagnosis of MST-related PTSD; 2) MST occurred at least 3 months before baseline assessment; 3) at least one clear memory of the MST; and 4) psychiatric medications were unchanged in the 6 weeks before baseline assessment. Exclusion criteria were: 1) substance dependence/abuse in the 3 months before baseline assessment; 2) current psychotic symptoms; 3) unstable bipolar disorder; 4) severe cognitive impairment; 5) concurrent enrollment in a psychotherapy for PTSD; 6) involvement in a violent intimate partner relationship; and/or 7) suicidal/homicidal intent warranting immediate intervention.

Measures

Suicide Cognitions Scale (SCS; Rudd et al., in press). The SCS is an 18-item self-report questionnaire that is rated on a 5-point scale, ranging from 1 (disagree strongly) to 5 (agree strongly), and is summed to obtain scores ranging from 18-90. The SCS was designed

to measure suicide-specific cognitions and beliefs and includes items such as "I can't stand this pain any more," "Nothing can help solve my problems," and "The world would be better off without me." Previous research has found both two-factor (i.e., unlovability and unbearability; Bryan et al, 2014; Rudd et al., in press) and three-factor (i.e. unlovability, unbearability, and unsolvability; Ellis & Rufino, 2015; Bryan et al., 2017) models best fits the SCS in both clinical and nonclinical populations. A recent factor analysis evaluating the SCS among veterans with MST-related PTSD determined there were four factors: unbearability, unlovability, unsolvability, or negative urgency. The SCS has been found to have strong internal consistency (Cronbach's alpha = .95-.97), test-retest reliability (r = .46-.54), and concurrent validity with measures of hopelessness (Beck Hopelessness Scale, r = .68), depression (Patient Health Questionnaire-9, r = .41), and suicidal ideation (Beck Scale for Suicidal Ideation, r = .62) (Bryan et al., 2014; Bryan et al., 2017; Ellis & Rufino, 2015; Rudd et al., in press).

Health Care Utilization (HCU). The HCU measure is a 34-item clinician-administered interview. This measure assessed participants' use of psychotherapy (i.e., individual, group, family/couples, and self-help groups), psychiatric hospitalizations, day treatment, residential programs, hospitalizations for physical problems, and outpatient medical visits. Participants were asked whether or not they have participated in the various forms of treatment more than two months ago, within the past two months, or are currently engaged in treatment of some kind. The psychometric properties of this interview have not been investigated. For the purposes of this study, the variables will be grouped according to mental health outpatient visits, mental health inpatient visits, medical outpatient visits, or

medical inpatient visits. Variables will be assessed dichotomously (i.e., yes/no to visits in the past 2 months) and continuously (i.e., total number of visits in the past 2 months).

The Short Form-36 Health Survey (SF-36; Ware, Snow, Kosinski, & Gandek, 1993). The SF-36 is a self-report measure that assesses psychosocial and physical health functioning. The SF-36 is made up of composite scores (Ware, Kosinski, & Keller, 1994), including the Mental Health composite score (MCS; Vitality, Social Functioning, Role-Emotional, Mental Health) and the Physical Health composite scores (PCS; Physical Functioning, Role-Physical, Bodily Pain, General Health). Higher scores on the MCS and PCS indicate better mental health and physical health functioning. The SF-36 has been found to have sound psychometric properties (McHorney, Ware, & Raczek, 1993; Ware, Gandek, & the IQOLA Project Group, 1994).

A sociodemographic questionnaire was used to assess age, years of education, racial-ethnic self-identification, marital status, and PTSD-related service connection.

Procedure

Veterans participated in a baseline assessment that included the administration of the SCS, HCU, SF-36, a sociodemographic form, and additional study measures (see Surís et al., 2013 for additional details about other measures). Eligible veterans were then randomized into CPT or Present Centered Therapy (PCT) and participated in 12 1-hour individual psychotherapy sessions. The version of CPT utilized in this RCT included a written trauma account, which is now referred to as "CPT+A" per Resick et al. (2017). For the purposes of this study, only women veterans will be included in the analyses.

Analytic plan

To best capture how SCs affect health care utilization, this relationship was assessed dichotomously (i.e., whether or not SCs affected if women veterans utilized services at all) and continuously (i.e., whether the amount of utilization was affected by SCs). All statistical analyses were conducted using SPSS (IBM Corp. 2013). Four sequential logistic regression analyses were conducted to evaluate health care utilization dichotomously, with outpatient mental health, inpatient mental health, outpatient medical care, and inpatient medical care entered as outcome variables. Block 1 predictors consisted of sociodemographic variables (i.e., age, years of education, racial-ethnic self-identification, marital status, and PTSD-related service connection) and the PCS from the SF-36, in order to account for physical health comorbidities and associated disease burden. Block 2 predictors included the suicide cognitions found in the first study (i.e., unlovability, unbearability, unsolvability, and negative urgency). In order to ensure assumptions are met (per guidelines by (Tabachnick & Fidell, 2013), linearity in the logit was tested and multicollinearity was assessed by the tolerance statistic and Variable Inflation Factor (VIF).

To evaluate health care utilization continuously, four hierarchical multiple linear regression analyses were conducted. To ensure assumptions of multiple linear regression were met (per guidelines by Tabachnick & Fidell, 2013), residuals were assessed for normality, linearity, and homoscedasticity; independence of errors was assessed using the Durbin-Watson statistic; and multicollinearity was assessed using the tolerance statistic and VIF. Outpatient mental health, inpatient mental health, outpatient medical, and inpatient medical care were entered as the outcome variables. The first block included simultaneously

entered sociodemographic variables (i.e., age, years of education, marital status, racial-ethnic self-identification, and PTSD-related service connection) and the PCS from the SF-36. The second block included four factors derived from the SCS as predictor variables using simultaneous entry.

Results

Sample Characteristics

This study sample included 116 women veterans that predominantly self-identified as Black, non-Hispanic ($n = 53$, 45.7%). The mean age was 45.24 years (SD = 9.5) and the mean number of years of education was 14.38 (SD = 2.07). Sociodemographic information for this sample is described in further detail in Table 5.

Logistic Regression Analyses

To ensure assumptions are met (Tabachnick & Fidell, 2013), neither linearity in the logit nor multicollinearity was observed. Four sequential logistic regression analyses were conducted and the outcome variables (i.e., outpatient mental health, inpatient mental health, outpatient medical care, and inpatient medical care) were defined as 0 = did not utilize services and 1 = did utilize services. The only model found to be statistically significant was inpatient medical care (χ^2 (11) = 22.14, $p = 0.023$). No predictors within this model were found to be significant; however, two predictors were trending toward significance, the PCS ($p = 0.057$) and Unbearability ($p = 0.052$; see Table 6). The Hosmer-Lemeshow goodness-of-fit test was nonsignificant ($p = 0.994$), suggesting good model fit. The variance accounted for by the model was moderate (Cox & Snell $R^2 = 0.18$; Nagelkerke $R^2 = 0.53$) and the model

displayed good ability to predict use of inpatient medical care, accurately classifying 94% of cases overall.

The model predicting outpatient mental health utilization was not significant (χ^2 (11) = 7.99, $p = 0.714$); Cox & Snell $R^2 = 0.07$; Nagelkerke $R^2 = 0.09$) and only correctly classified 66.1% of cases overall.

Within the model predicting inpatient mental health utilization, a complete separation within the race-ethnicity variable was observed. As a result, the model was re-run excluding this variable. The final model was not significant (χ^2 (10) = 10.83, $p = 0.371$); Cox & Snell $R^2 = 0.09$; Nagelkerke $R^2 = 0.30$) and correctly classified 95.4% of cases overall.

The model predicting outpatient medical care utilization was not significant (χ^2 (11) = 11.97, $p = 0.365$); Cox & Snell $R^2 = 0.10$; Nagelkerke $R^2 = 0.17$) and classified 82.6% of cases overall.

Multiple Regression Analyses

A bivariate correlation matrix for all predictor variables is included in Table 7. The assumptions of normality, linearity, homoscedasticity, independence of errors, and multicollinearity were all met (Tabachnick and Fidell, 2013). Of the four hierarchical linear regressions conducted, none of the models were found to be statistically significant.

The model predicting outpatient mental health utilization was not significant after the first block of sociodemographic variables were entered and after the SCS factors were entered in the second block, $F(11, 97) = .58$, $p = 0.838$, $R^2_{adj.} = -0.04$.

The model predicting inpatient mental health utilization was not significant after the first block of sociodemographic variables were entered and after the SCS factors were entered in the second block, $F(11, 97) = .75$, $p = 0.692$, $R^2_{adj.} = -0.03$.

The model predicting outpatient medical care utilization was not significant after the first block of sociodemographic variables were entered and after the SCS factors were entered in the second block, $F(11, 97) = 1.61$, $p = 0.108$, $R^2_{adj.} = 0.06$.

The model predicting inpatient medical care utilization was not significant after the first block of sociodemographic variables were entered and after the SCS factors were entered in the second block, $F(11, 97) = .63$, $p = 0.802$, $R^2_{adj.} = -0.04$.

Discussion

The current study sought to understand whether SCs predicted utilization of mental health and medical care at the VA by woman veterans with MST-related PTSD. The only model that was found to be significant was predicting inpatient medical care utilization when it was assessed dichotomously. Within this model, there were no predictors found to be significant; however, the PCS and unbearability were trending towards significance. As such, these results must be considered preliminary and in the service of generating hypotheses for future research. Individuals who reported lower physical health concerns (via the PCS) and lower feelings of unbearability (via the SCS) were predicted to utilize inpatient medical care. Both the PCS and the Unbearability factor derived from the SCS rely on an individual's perception of their wellbeing, both physical and emotional. The connection between physical health and risk for suicidal SDV is well established (MacLean, Kinley, Jacobi, Bolton, & Sareen, 2011), and items on the Unbearability factor could be interpreted to include physical

health (i.e., "I can't stand this pain anymore" and "It is impossible to describe how badly I feel;" Rudd et al., in press). Considering that lower scores on the PCS and unbearability subscale predicted utilization of services, it is possible the perception of pain (either physical or emotional) was sufficient to motivate participants to present for medical treatment, but was not so great that this motivation was turned towards suicidal SDV. Given the elevated risk for woman veterans with MST-related PTSD not only for suicidal SDV but also for greater physical comorbidities (Kimerling, Gima, Smith, Street, & Frayne, 2007; Surís & Lind, 2008), future research could focus on the interaction between physical health functioning and SCs.

This study has several limitations worth noting. The sample only included women veterans with MST-related PTSD and these factors may limit generalizability to male veterans or veterans with other trauma histories. This was also a treatment-seeking sample, as all the women veterans included were participating in a treatment study, and this likely influenced reported instances of mental health care utilization as study participants were anticipating being randomized to receive outpatient mental health care specifically for MST-related PTSD.

The HCU measure utilized also relied upon participant reporting and did not include concurrent chart review, which may have revealed greater utilization of mental health or medical care services within the VA. Additionally, the data would not necessarily have included any mental health or medical care women veterans' received outside of the VA. As previously discussed, women veterans have reported barriers to seeking care within the VA due to concerns about the lack of gender-sensitive treatment environments (Kimerling et al.,

2011; Monteith et al., 2018; Vogt, 2011; Washington, Bean-Mayberry, Riopelle, & Yano, 2011). As these factors were not directly studied in the parent RCT, future research should seek to include service utilization within and outside of the VA.

Lastly, the current study was seeking to understand the interaction between two relatively low base rate phenomenon; namely, SCs and health care utilization within the VA. It is unclear if the low frequency of mental health or medical care utilization (both inpatient and outpatient) is unique to this study's sample; women veterans with MST-related PTSD; or other unrelated factors. However, future research should seek to include a large sample of women veterans in order to better understand the treatment seeking behaviors among those who may be at risk for suicidal SDV.

While this study's results should be considered preliminary, this was a unique investigation into the relationship between mental health and medical care utilization and SCs among women veterans with MST-related PTSD. As a particularly at-risk group for future suicidal SDV, increasing the understanding of which factors may influence whether a woman veteran seeks treatment is an important step in decreasing this risk. SCs may still have potential as predictors of health care utilization and this study provides preliminary results that appear to support the relationship between SCs and medical care utilization.

CHAPTER FOUR
Integrated Conclusions

Integrated Conclusions

Veterans with MST-related PTSD are at elevated risk for both physical health and psychosocial consequences, including greater depression and PTSD symptom severity as well as future suicidal SDV (Blais & Monteith, 2018; Calhoun et al., 2016; Kimerling et al., 2007; Monteith et al., 2016; Schry et al., 2015; Surís & Lind, 2008; Surís, Lind, Kashner, & Borman, 2007; Surís, Lind, Kashner, Borman, & Petty, 2004). Unfortunately, there has been little research into understanding risk and protective factors for suicidal SDV among this population. A construct that has been investigated as a risk factor in other populations is suicide-specific cognitions (Bryan et al., 2014; Bryan & Rudd, 2016; Bryan et al., 2017; Ellis & Rufino, 2015; Rudd, 2006). The included studies sought to increase understanding of the Suicide Cognitions Scale (SCS; Rudd et al., in press) as both a risk assessment tool and to also investigate whether suicide-specific cognitions influence treatment utilization specifically among women veterans with MST-related PTSD.

The first study sought to evaluate the SCS (Rudd et al., in press) by determining the optimal factor structure and evaluate the psychometric properties of the measure within a sample of veterans with MST-related PTSD. Although previous research has found both two- and three-factor solutions, this study found a four-factor structure to best fit this sample. The four factors included three previously established factors (i.e., unbearability, unlovability, unsolvability) and one novel factor (i.e., negative urgency). The measure also demonstrated

strong psychometric properties, including excellent internal consistency, convergent validity, and divergent validity. The finding of a novel factor within this sample has potential to increase clinician ability to assess acute risk for suicidal SDV among veterans with MST-related PTSD.

The second study investigated suicide-specific cognitions as potential predictors of mental health and medical care utilization among women veterans with MST-related PTSD. When assessed dichotomously, the model predicting inpatient medical care was found to be significant and included predictors that approached significant (i.e., the PCS and unbearability). Lower levels of reported physical health concerns and unbearability predicted inpatient medical care utilization. Although these results should be interpreted with caution, it does suggest that suicide-specific cognitions may be predictors of health care utilization within this population and the relationship between suicide-specific cognitions and physical health functioning bears additional investigation.

These studies intended to increase understanding and begin generating hypotheses for future research concerning veterans with MST-related PTSD, risk for suicidal SDV, and factors that influence health care utilization in this population. The results from the first study indicate that the SCS is not only a psychometrically valid measure for use with veterans with MST-related PTSD, but it also provided initial support for a novel fourth factor, negative urgency. Although there were several limitations, the second study supports the relationship between suicide-specific cognitions and utilization of health care services, specifically inpatient medical care. Future research should include a large sample of veterans with MST-related PTSD to determine if the fourth factor is unique to this sample or to this population.

This data could then be used to deepen understanding of how suicide-specific cognitions may be barriers to seeking treatment. It would be beneficial to also investigate the influence of suicide-specific cognitions of health care utilization both within and outside of the VA. Increasing the understanding of how suicide-specific cognitions can be utilized as a risk assessment tool has the potential to aid in providing effective treatment for veterans with MST-related PTSD who are at risk for future suicidal SDV, as well as determining how best to get those veterans into appropriate care.

TABLES

Table 1

Sociodemographic Information

Variable	M	SD
Age	45.70	9.3
Years of education	14.25	2.07
SCS Total	43.52	14.42
BDI-G	27.40	10.80
BDI-S	5.94	2.80
BDI-C	9.54	5.21
QIDS-SR$_{16}$ Total	16.32	5.0
STAXI – State Anger	24.28	11.0
STAXI – Trait Anger	21.10	7.20
STAXI – Anger Expression, Internal	20.0	5.03
STAXI – Anger Expression, External	16.16	5.33
STAXI – Anger Control, Internal	22.10	5.40
STAXI – Anger Control, External	21.71	5.60
	n	%
Gender		
Female	116	89.2
Male	14	10.8
Marital Status		
Never Married	16	12.3
Married	28	21.5
Cohabiting	5	3.8
Separated	17	13.1
Divorced	57	43.8
Widowed	7	5.4
Racial-ethnic self-identification		
White, non-Hispanic	51	39.2
Black, non-Hispanic	56	43.1
White, Hispanic	5	3.8
Black, Hispanic	1	.8
American Indian/Alaskan Native	4	3.1
Native Hawaiian/Pacific Islander	2	1.5
Other[a]	11	8.5
PTSD-SC		
Yes	111	85.4
No	19	14.6

Note. SCS = Suicide Cognitions Scale; BDI = Beck Depression Inventory; QIDS-SR$_{16}$ = Quick Inventory of Depressive Symptomatology, Self-Report; STAXI = State-Trait Anger Expression Inventory

[a] "Other" included individuals who identified as "multi-racial."

Table 2

Summary of Exploratory Factor Analysis Results Using a Maximum Likelihood Approach

	Factor Loadings			
Item	1	2	3	4
1. The world would be better off without me	.311	.050	-.053	**.475**
2. Suicide is the only way to solve my problems.	.192	**.313**	.077	-.034
3. I can't stand this pain anymore	**.862**	-.009	-.101	.016
4. I've never been successful at anything.	-.121	.131	-.050	**.640**
5. I can't tolerate being this upset any longer.	**.623**	-.072	-.194	.379
6. I can never be forgiven for the mistakes I've made.	-.098	-.009	.403	**.541**
7. No one can help me solve my problems.	-.035	-.021	**.817**	.043
8. It is unbearable when I get this upset.	**.603**	.069	-.040	.072
9. I am completely unworthy of love.	-.002	-.053	.328	**.573**
10. Nothing can help solve my problems.	.096	.029	**.750**	.063
11. It is impossible to describe how badly I feel.	**.736**	-.173	.081	.088
12. I can't cope with my problems any longer.	**.833**	.117	.079	-.202
13. I can't imagine anyone being able to withstand this kind of pain.	**.649**	.070	.307	-.215
14. There is nothing redeeming about me.	.065	.016	.155	**.670**
15. Suicide is the only way to end this pain.	-.073	**.906**	.045	.045
16. I don't deserve to live another moment.	-.047	**1.014**	.024	-.029
17. I would rather die now than feel this unbearable pain.	.118	**.667**	-.166	.249
18. No one is as loathsome as me.	.118	.246	111	**.398**

Table 3

Correlations Among the Factors

Factor	1	2	3	4
1	--			
2	.477	--		
3	.511	.390	--	
4	.620	.600	.571	--

Table 4

Correlations Among the Measures

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. SCS	--														
2. Unbearability	.86***	--													
3. Negative Urgency	.74***	.48***	--												
4. Unsolvability	.70***	.50***	.40***	--											
5. Unlovability	.90***	.62***	.61***	.63***	--										
6. BDI - G	.68***	.67***	.46***	.40***	.58***	--									
7. BDI - S	.39***	.42***	.33***	.12	.30***	.74***	--								
8. BDI - C	.71***	.62***	.44***	.45***	.70***	.87***	.45***	--							
9. QIDS-SR$_{16}$	.54***	.56***	.40***	.26**	.43***	.78***	.64***	.65***	--						
10. State Anger	.38***	.45***	.30**	.26**	.22*	.37***	.25**	.34***	.40***	--					
11. Trait Anger	.35***	.40***	.16	.20*	.30**	.35***	.19*	.40***	.31***	.42***	--				
12. Anger Expression Out	.27**	.26**	.13	.12	.26**	.29**	.07	.37***	.22*	.43***	.67***	--			
13. Anger Expression In	.26**	.30**	.07	.20*	.21*	.40***	.29**	.37***	.36***	.23*	.47***	.31***	--		
14. Anger Control Out	-.30**	-.23**	-.30**	-.14	-.28**	-.22*	-.088	-.27**	-.16	-.30**	-.53***	-.46***	-.02	--	
15. Anger Control In	-.32***	-.23**	-.31***	-.22*	-.31***	-.21*	-.03	-.26**	-.17	-.30**	-.47***	-.43***	-.05	.79***	--

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$
Note. SCS = Suicide Cognitions Scale; BDI = Beck Depression Inventory; QIDS-SR$_{16}$ = Quick Inventory of Depressive Symptomatology

Table 5

Sociodemographic Information

Variable	*M*	*SD*
Age	45.24	9.5
Years of education	14.38	2.07
PCS	37.10	11.50
	n	*%*
Marital Status		
Never Married	13	11.2
Married	26	22.4
Cohabiting	3	2.6
Separated	15	12.9
Divorced	52	44.8
Widowed	7	6.0
Racial-ethnic self-identification		
White, non-Hispanic	41	35.2
Black, non-Hispanic	53	45.7
White, Hispanic	5	4.3
American Indian/Alaskan Native	4	3.4
Native Hawaiian/Pacific Islander	2	1.7
Other[a]	11	9.5
PTSD-SC		
Yes	98	84.5
No	18	15.5

Note. PCS = Physical Health composite score of the SF-36
[a]"Other" included individuals who identified as "multi-racial."

Table 6

Logistic Regression Model of Predictors of Utilizing Inpatient Medical Care

Variable	*b*	*SE*	Wald	*p*	Exp(B)
PCS	-.31	.16	3.62	0.057	.73
Unbearability	-.72	.37	3.77	0.052	.49

*Overall Model was Significant χ^2 (11) = 22.14, p = 0.023; Cox & Snell R^2 = 0.18; Nagelkerke R^2 = 0.53.

Note. PCS = Physical Health composite score of the SF-36; health care utilization: 0 = did not utilize services, 1 = did utilize services.

Table 7

Bivariate Correlation Matrix for Predictor Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Age	--									
2. Years of Education	.16	--								
3. Marital Status	.26*	.10	--							
4. Racial-Ethnic Self-Identification	-.02	-.05	.05	--						
5. PTSD-SC	-.05	.07	-.04	.04	--					
6. PCS	-.31**	-.10	-.07	-.19*	-.06	--				
7. Unbearability	.00	-.01	-.00	.20*	-.01	-.35***	--			
8. Negative Urgency	.12	.03	.09	-.08	-.02	-.04	.46***	--		
9. Unsolvability	.07	-.05	-.01	.14	.16	-.04	.49***	.40***	--	
10. Unlovability	-.12	-.00	-.00	.12	.03	-.05	.60***	.62***	.65***	--

* *p* < 0.05   ** *p* < 0.01   *** *p* < 0.001
Note. PTSD-SC = PTSD Service Connection; PCS = Physical Health composite score of the SF-3

APPENDIX A
Aims and Hypotheses

<u>Overall Aim:</u> To evaluate SCs as a risk assessment tool by investigating psychometric

properties of the SCS and potential predictors for health care utilization.

<u>Study I:</u>

<u>*Aim 1:*</u> Determine the optimal factor structure of the SCS.

> <u>*Hypothesis 1:*</u> Given the exploratory approach, either a two- or three-factor solution
>
> will be found to be the best fit for the SCS among veterans with MST-related PTSD.

<u>*Aim 2:*</u> Investigate psychometric properties of the SCS.

> <u>*Hypothesis 2:*</u> The SCS will be psychometrically valid, with acceptable reliability and
>
> validity in this specific sample.
>
> > a. For convergent validity, medium to large effect sizes ($r = .3$-$.5$) are
> >
> > hypothesized between the SCS and the QIDS-SR16 and BDI-II G factor. Small
> >
> > to medium effect size ($r = .1$-$.3$) for the BDI-II S factor is predicted, and a large
> >
> > effect size ($r \geq .5$) is predicted for the BDI-II C factor.
> >
> > b. Regarding divergent validity, a small effect size ($r \leq .3$) is expected between the
> >
> > SCS and the STAXI.

<u>Study II:</u>

<u>*Aim 1:*</u> Investigate whether SCs predict mental health (inpatient and outpatient) and medical

(inpatient and outpatient) care utilization.

<u>*Hypothesis 1:*</u>

1. If using the two-factor predictors from the SCS:

> > a. Unbearability will be found to predict greater health care utilization.

       b. Unlovability will be found to predict less health care utilization.

2. If using the three-factor predictors from the SCS:

       a. Unbearability will be found to predict greater health care utilization.

Unsolvability and unlovability will be found to predict less health care utilization.

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