

## Seeking Safety Pilot Outcome Study at Walter Reed National Military Medical Center

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**ABSTRACT** Post-traumatic stress disorder (PTSD) and substance use disorder are two of the most prominent psychiatric disorders among military service members. Seeking Safety (SS) is an evidence-based behavioral therapy model for this comorbidity. This article reports results of a study of SS conducted in a military setting. Our pilot trial addressed outcomes, feasibility, and satisfaction. SS was conducted as is to evaluate its impact without adaptation for military culture. The sample was 24 outpatient service members (from the Army, Navy, Air Force, and Marines) with 33% minority representation. Inclusion criteria were current PTSD and/or SUD. Ten clinicians participated in this study after receiving SS training. Results showed significant improvements on most outcomes, including substance use on the Brief Addiction Monitor; PTSD symptoms on the PTSD Checklist—Military Version (total and criterion D); and the Trauma Symptom Checklist-40 (sexual abuse trauma index and anxiety subscale); functioning on the Sheehan Disability Scale (total and family subscale); psychopathology on the Zung Depression Scale total; the Behavior and Symptom Identification Scale (BASIS)-24 (total and subscales depression functioning, emotional lability, and psychosis); and the Brief Symptom Inventory-18 (total and anxiety subscale); and coping on the Coping Self-Efficacy Scale (total). Satisfaction was strong. Discussion includes methodology limitations and next steps.

### INTRODUCTION

Post-traumatic stress disorder (PTSD) and substance use disorders (SUDs) are some of the most prominent psychiatric disorders among service members.<sup>1,2</sup> Such disorders are associated with decreased work productivity and social functioning and increased family problems.<sup>3,4</sup> Yet they often go untreated because of service members' lack of awareness, stigma, and barriers to receiving mental health services. Positive outcomes are possible for both disorders<sup>5,6</sup>; thus rehabilitation is the goal.

Seeking Safety (SS)<sup>7</sup> was developed specifically to address PTSD and SUD. Per the model developer (LMN), it is also known by the name "Seeking Strength" for populations such as military or first responders who must go into harm's way in their work and thus cannot necessarily always seek safety in a literal sense. SS is a resiliency-oriented, cognitive-behavioral therapy approach that provides psychoeducation and coping skills to help clients attain greater strength and safety in their

lives—from substances, impulsive behavior, and self-harm, for example. As a present-focused treatment, it does not require clients to describe past trauma. It promotes stabilization and emphasis on current functioning, goals that are highly prized in military settings. The treatment is designed for flexible use: for any type of trauma and substance, both genders, in group or individual format, and any treatment setting. SS addresses cognitive, behavioral, interpersonal, and case management domains. It has 25 topics, each addressing a safe coping skill, such as "Honesty; Taking Good Care of Yourself; Recovery Thinking; Asking for Help; Healing from Anger"; and "Creating Meaning." Topics can be conducted in any order, using as few or as many as are possible within the available time frame.

SS is established as an evidence-based treatment using standard criteria in the field.<sup>8</sup> There are over 35 completed outcome studies on SS, including pilots, randomized controlled trials (RCTs), and multisite trials (see Ref. 5 for a comprehensive review of studies by all investigators through 2013, and since then studies such as Ref. 9). SS has evidenced consistent positive impact in reducing substance use, trauma-related symptoms, and other problems.<sup>5</sup> It is the only model tested thus far that decreased both PTSD and SUD by end of treatment compared to a control condition,<sup>5</sup> including RCTs of exposure-based (past-focused) PTSD therapies in PTSD/SUD samples.<sup>10,11</sup>

In the past decade, a greater focus on evidence-based practice in the Department of Defense has aimed to increase the quality and impact of psychiatric care from the battlefield to tertiary care medical facilities. The current pilot study is part of that broader mission. Our goal was to evaluate SS in a military setting, with a focus on outcomes, feasibility, and satisfaction.

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## METHODS

### Setting

This study was conducted at Walter Reed National Military Medical Center (WRNMMC), and specifically within the Psychiatry Continuity Service (PCS) and Addiction Treatment Service (ATS). The PCS is a tertiary referral resource that provides both adult partial hospital and intensive outpatient levels of care for active duty service members, of whom approximately 50% have been deployed to an area of combat operation. The ATS provides outpatient substance abuse services for active duty personnel, eligible dependents, and retirees, 18 years and older. Only about 10% of patients in ATS are command-directed to attend. Alcohol is the primary substance for ATS admissions.

### Protocol

Our goal was to evaluate the impact of SS when conducted as is, with no specific adaptation for the military environment. All participants received treatment-as-usual (TAU) plus SS. Patients received TAU services from PCS or ATS or both based on their clinical needs. Recruitment occurred from May 2011 to June 2012. The study protocol was approved by the WRNMMC Institutional Review Board and the Department of Defense Human Research Protection Office. SS was conducted in individual and group modality with the latter in an open-group format. Sessions lasted 60 to 90 minutes and were conducted once or twice per week (the former for individual sessions and the latter for group). Participants were encouraged to attend as many of the 25 SS treatment topics as possible within their length of stay, which was typically 3 to 4 weeks.

### Patients

Twenty-four service members comprised the patient sample, recruited from the PCS and ATS programs based on routine information provided to them about the study during their treatment intake. Also, a study flier was posted in the hospital broadly and a notice placed in the hospital newsletter. The sample was small because of the pilot nature of this study. All had to have current PTSD and/or SUD per Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Revised. Moreover, participants with current PTSD also had to have a history of SUD in remission; conversely, if they had current SUD, they also had to have a trauma history. Exclusions were current psychosis; untreated bipolar I disorder; and major intellectual disability or traumatic brain injury that would prevent comprehension of written materials. Inclusion/exclusion criteria were minimal to achieve a sample typical of real practice. To be included in the final analyzable sample, patients had to attend at least eight sessions of SS, each a different topic from the SS manual. Eight sessions were defined a priori as the minimum dose to evaluate the impact of SS, representing about one-third of

the treatment and a length feasible within the typical length of stay.

### SS Clinicians

Ten clinicians conducted SS; nine were female. Seven were from PCS and three from ATS. Seven were social workers and one each psychiatrist, psychologist, recreational therapist, and art therapist (none with multiple disciplines). Four clinicians were present throughout the study while the remaining clinicians fluctuated because of staff turnover, absences, etc. Their average clinical experience was 10.9 years (SD = 8.62). Clinicians were trained by a developer-certified SS instructor in a 1-day workshop or by viewing the 4-hour SS training videos, plus 2 hours of phone consultation with the SS instructor. The instructor evaluated fidelity using the SS Adherence Scale<sup>12</sup> based on session audiotapes and/or telephone role-plays of full-length SS sessions.

### Measures

Data collection occurred at baseline, session 8 of SS, and end of treatment just after the last SS session. Unless indicated otherwise, all measures were collected at all three timepoints, are self-report, have psychometric validation, and are scaled such that higher scores indicate greater impairment. Measures were scored as specified by the scale developer.

#### *Patient Measures*

**Substance use.** The Brief Addiction Monitor (BAM)<sup>13</sup> has 17 items rated for the past month. It has three subscales: "use" (scaled 0–12) measuring number of days of use per substance; "risk" (scaled 0–24), i.e., factors associated with increased substance use, such as psychological problems, craving, and risky situations; and "protection" (scaled 0–24), i.e., factors associated with decreased substance use, such as social support and 12-step group attendance. A higher score on the latter subscale indicates less pathology.

**Trauma and PTSD.** The Stressful Life Experiences Screening Questionnaire<sup>14</sup> identifies lifetime exposure to 20 types of trauma, each scaled 0 to 10 for the extent to which the item "describes your experience" (0 = did not experience this to 10 = exactly like my experiences). Items endorsed at the midpoint of 5 or higher were identified as positive responses. The PTSD Checklist—Military Version (PCL-M)<sup>15</sup> has 17 items to assess PTSD symptoms in the past month (scaled 1–5). The Trauma Symptom Checklist-40 (TSC-40)<sup>16</sup> has 40 items to assess trauma-related symptoms in the past 2 months (scaled 0–4).

**Functioning.** The Sheehan Disability Scale<sup>17</sup> has 5 items assessing functioning in work/school, social life, and family life/home responsibilities in the past week (scaled 1–10). Higher scores indicate better functioning.

*Coping.* The Coping Strategies Inventory<sup>18</sup> has 18 items to measure adaptive and maladaptive coping styles in the past month (scaled 1–5). The Coping Self-Efficacy Scale<sup>19</sup> has 26 items of perceived ability to cope with challenges in the past month (scaled 0–10). On both measures, higher scores indicate better functioning.

*Psychopathology.* The Brief Symptom Inventory (BSI)<sup>20</sup> has 18 items assessing psychological symptoms in the past week (scaled 0–4). The Zung Depression and Anxiety Scale<sup>21</sup> has 20 items to measure depression and anxiety in the past several days (scaled 1–4). The Behavior and Symptom Identification Scale (BASIS-24)<sup>22</sup> has 24 items to assess symptoms and functioning in the past week (scaled 0–4).

#### *Clinician Assessments*

At baseline, the Clinician Background Questionnaire identified professional characteristics (LM Najavits, Clinician Background Questionnaire, unpublished scale, Harvard Medical School, Boston, Massachusetts and McLean Hospital, Belmont, Massachusetts, 1992). The PTSD/SUD Treatment Knowledge Test is 27 questions to evaluate learning of information from the SS manual (LM Najavits, Knowledge of PTSD/SUD treatment principles multiple choice test, unpublished scale, McLean Hospital, Belmont, Massachusetts, 2000). The Protocol Implementation Questionnaire has 16 items measuring clinicians' views of a manualized treatment, in this case adapted for SS, scaled 0 to 100%.<sup>23</sup>

#### *Patient and Clinician Measures*

The Clinical Global Impressions Scale<sup>24</sup> was used to rate patients' level of improvement since baseline (scaled 1 = very much improved to 7 = very much worse). The SS End-of-Session Questionnaire from the SS book has 6 items to obtain feedback (scaled 0–3). The SS End-of-Treatment Questionnaire, also from the SS book, was collected at session 8 and end-of-treatment to measure how helpful SS treatment components were, with 59 items (scaled –3 to +3). On the latter two measures, higher scores indicate more positive views.

*Data analysis.* We used mixed effects modeling as our primary analytical approach to account for the clustered structure of the data (i.e., repeated assessments within an individual). Specifically, we used mixed model analysis of variance,<sup>25</sup> which uses all available data and is relevant for datasets such as ours where some measures were collected more frequently than others. To address non-normality, square or square root transformations<sup>26</sup> were applied to improve the approximation of normality. For effect size calculations, we used Cohen's D to compare two timepoints (pretreatment versus post-treatment); for variables with more than two timepoints, we used eta-squared as the latter does not assume linear change over time. Effect sizes were interpreted using standard benchmarks<sup>27</sup>: for Cohen's D, 0.8 is large, 0.5 is medium, and 0.2 is small; for eta-squared, 0.14 is large,

0.06 is medium, and 0.01 is small. Finally, for one variable on one measure, the BAM use subscale, we used generalized estimating equation (GEE) methodology,<sup>28</sup> which analyzes longitudinal binary responses, as well as count data, while addressing the clustering of the data attributable to the repeated measures within a subject. For the GEE analysis, effect size is identified using the odds ratio extended from Cohen's classification,<sup>29</sup> which for any effect size over 1.0 has thresholds of 1.5 for small, 2.5 for medium, 4 for large, and 10 for very large.

## RESULTS

### *Sample Characteristics*

Of the patient sample ( $n = 24$ ), 66.7% were male, 25% were married, 58.3% had attended college, and the average age was 28.9 years ( $SD = 8.77$ ). Ethnicity was 66.7% White, 25% African American, 4.17% Hispanic or Latino, and 4.17% more than one race. Four military branches were represented: 46% Army, 25% Navy, 17% Marine, and 12% Air Force. Service rank was not collected. In terms of trauma history on the SLEQ, patients reported a mean of 7.00 ( $SD = 3.31$ ,  $n = 24$  traumas). The most frequent (average score greater than 5 on the 10-point scale) were: witnessed or experiences a serious accident or injury ( $n = 20$ ); witnessed or experience a death of close friend or family member other than spouse or child ( $n = 20$ ); witnessed or experienced a life threatening illness ( $n = 18$ ); saw or handled dead bodies other than at a funeral ( $n = 15$ ); was involved in combat or war or lived in a war affected area ( $n = 12$ ); felt responsible for the serious injury or death of another person ( $n = 11$ ); witnessed or experienced a natural disaster ( $n = 10$ ); witnessed or was attacked with a weapon other than a combat or military setting ( $n = 10$ ); and witnessed someone else being choked, hit, spanked, or pushed hard enough to cause injury ( $n = 10$ ).

The clinician sample ( $n = 10$ ) was 90% female, an average age of 36.2 years ( $SD = 11.40$ ) and 10.9 ( $SD = 8.62$ ) years of clinical experience. Ethnicity was 50% White, 40% African American, 10% other or mixed. Most (60%;  $n = 6$ ) had a master's degree, one (10%) had an MD, and one (10%) had a doctoral degree. Clinicians reported a mean of 126.66 hours ( $SD = 176.07$ ,  $n = 9$ ) conducting SS groups before the study, and 0 hours conducting SS individually before the study. The latter large mean represented a bimodal sample in which four clinicians reported no hours and four reported over 100 hours.

### *Attendance*

Patients attended an average of 11.17 SS sessions ( $SD = 2.99$ ). All had access to at least 8 sessions of SS and beyond that available dosage varied based on length of stay. Most patients ( $n = 18$ ; 75%) completed 9 sessions or more and 6 subjects (25%) had the minimum 8 sessions to be included in the project. One participant attended 7 sessions and thus did

not meet the 8-session minimum dosage to be included in the analysis.

Outcomes

In Table I, of the 32 outcome variables analyzed, 15 (46.9%) were significant ( $p < 0.05$ ), far exceeding the number expected by chance (1.6, i.e., 5% of 32); these variables are bolded in the table. Nine of the 32 variables (28.1%) were trends ( $p = 0.05$  to  $p < 0.10$ ) and 8 were not significant (25%). Nonsignificant variables were the BAM subscales risk and protection, the PCL-M cluster C, BASIS-24 subscales self-harm and substance abuse, Coping Strategies Inventory mean, TSC-40 dissociation subscale, and BSI-18 somatization subscale.

Perception of Improvement

On the Clinical Global Impressions Scale, which was not an outcome measure per se as it was not collected at base-

line, both patients and clinicians reported a perception that patients had improved from baseline to session 8 (patients  $x = 2.83$ ,  $SD = 1.20$ ; clinicians  $x = 2.86$ ,  $SD = 0.79$ ) and to end-of-treatment (patients  $x = 2.00$ ,  $SD = 1.00$ ; clinicians  $x = 2.00$ ,  $SD = 1.00$ ).

Treatment Satisfaction

Table II provides the ratings by clinicians and clients on the SS End of Session Questionnaire, indicating consistent positive ratings. On the SS Feedback Questionnaire, both patients and clinicians rated the treatment positively overall at session 8 (patient mean = 2.13,  $SD = 0.80$ ; clinician mean = 2.30,  $SD = 0.48$ ) and end of treatment (patient mean = 2.40,  $SD = 0.56$ ; clinician mean = 2.40,  $SD = 0.56$ ).

Clinician Measures

On the Protocol Implementation Questionnaire, clinicians reported high ratings of perceived ability to conduct SS

TABLE I. Outcomes<sup>a</sup>

|   | Baseline                | Session 8      | End-of-Treatment | Across Time<br>(Fixed Effects)      | Effect Size                             |
|---|-------------------------|----------------|------------------|-------------------------------------|---|
|   | Mean (SD)               | Mean (SD)      | Mean (SD)        | F (df), p                           | Eta Squared                             |
|   | PTSD Checklist-Military |                |                  |                                     |   |
| <b>Total Score</b>                      | 57.68 (14.33)           | 50.66 (17.37)  | 36.63 (17.82)    | 4.54 (2, 8.65), 0.045               | 0.18 (Large)                            |
| Cluster B                               | 15.96 (6.43)            | 14.58 (6.21)   | 10.00 (5.87)     | 3.27 (2, 12.12), 0.073 <sup>b</sup> | 0.23 (Large)                            |
| <b>Cluster D</b>                        | 18.35 (4.73)            | 15.79 (5.37)   | 9.55 (2.60)      | 19.51 (2, 14.60), <0.001            | 0.05 (Small)                            |
| Trauma Symptom Checklist-40             |                         |                |                  |                                     |   |
| Mean                                    | 1.37 (0.47)             | 1.32 (0.58)    | 0.71 (0.58)      | 4.39 (2, 7.52), 0.054 <sup>†</sup>  | 0.18 (Large)                            |
| <b>Anxiety</b>                          | 1.16 (0.52)             | 1.10 (0.61)    | 0.49 (0.49)      | 6.48 (2, 18.95), 0.007              | 0.12 (Medium)                           |
| <b>Sexual Abuse Trauma Index</b>        | 1.28 (0.59)             | 1.41 (0.61)    | 0.80 (0.65)      | 4.53 (2, 11.93), 0.034              | 0.17 (Large)                            |
| Sleep                                   | 2.28 (0.59)             | 2.17 (0.65)    | 1.23 (0.89)      | 3.09 (2, 9.53), 0.093 <sup>†</sup>  | 0.24 (Large)                            |
| Depression                              | 1.65 (0.58)             | 1.39 (0.74)    | 0.78 (0.75)      | 4.73 (2, 5.56), 0.063 <sup>†</sup>  | 0.17 (Large)                            |
| Sexual Problems                         | 0.95 (0.67)             | 0.89 (0.65)    | 0.60 (0.63)      | 4.13 (2, 8.47), 0.06 <sup>†</sup>   | 0.19 (Large)                            |
| Zung Depression Scale                   |                         |                |                  |                                     |   |
| <b>Total</b>                            | 56.56 (9.77)            | 51.76 (13.06)  | 42.21 (12.24)    | 6.38 (2, 5.06), 0.041               | 0.14 (Large)                            |
| BASIS-24                                |                         |                |                  |                                     |   |
| <b>Total</b>                            | 36.39 (15.53)           | 35.08 (17.39)  | 20.75 (11.88)    | 8.04 (2,18.31), 0.003               | 0.10 (Medium)                           |
| <b>Depression Functioning</b>           | 13.76 (5.23)            | 12.13 (4.90)   | 6.12 (4.81)      | 12.04 (2, 9.49), 0.002              | 0.07 (Medium)                           |
| <b>Emotional Liability</b>              | 7.00 (2.98)             | 6.38 (2.87)    | 3.60 (1.34)      | 5.27 (2, 14.15), 0.019              | 0.15 (Large)                            |
| <b>Psychosis</b>                        | 4.17 (3.35)             | 4.08 (3.94)    | 1.87 (1.61)      | 8.12 (2, 36.24), 0.001              | 0.08 (Medium)                           |
| Relationships                           | 8.19 (4.78)             | 8.42 (5.47)    | 5.80 (5.40)      | 3.46 (2, 9.13), 0.076 <sup>†</sup>  | 0.21 (Large)                            |
| Coping Self-Efficacy Scale <sup>c</sup> |                         |                |                  |                                     |   |
| <b>Mean</b>                             | 122.11 (53.62)          | 135.17 (53.09) | 194.00 (60.78)   | 7.51 (2, 10.11), 0.010              | 0.11 (Medium)                           |
| Sheehan Disability Scale                |                         |                |                  |                                     |   |
| <b>Total</b>                            | 21.83 (7.40)            | 18.08 (8.40)   | 12.60 (9.04)     | 5.05 (2, 13.76), 0.023              | 0.16 (Large)                            |
| <b>Family</b>                           | 6.57 (3.41)             | 6.17 (2.99)    | 2.80 (1.92)      | 4.84 (2, 15.95), 0.023              | 0.16 (Large)                            |
| Social                                  | 7.52 (2.98)             | 6.04 (3.16)    | 4.80 (3.90)      | 3.03 (2, 23.55), 0.067 <sup>†</sup> | 0.24 (Large)                            |
| Work/School                             | 7.74 (2.73)             | 5.88 (3.26)    | 5.00 (4.18)      | 3.22 (2, 12.92), 0.073 <sup>†</sup> | 0.23 (Large)                            |
| Brief Symptom Inventory-18              |                         |                |                  |                                     |   |
| <b>Mean</b>                             | 2.76 (.82)              | 2.52 (0.89)    | 1.68 (0.68)      | 6.10 (2, 8.41), 0.023               | 0.14 (Large)                            |
| <b>Anxiety</b>                          | 3.06 (1.02)             | 2.67 (1.01)    | 1.55 (0.46)      | 14.58 (2, 14.69), <0.001            | 0.06 (Medium)                           |
| Depression                              | 3.03 (1.10)             | 2.75 (1.20)    | 1.90 (1.17)      | 3.84 (2, 8.49), 0.065 <sup>†</sup>  | 0.20 (Large)                            |
| Brief Addiction Monitor                 |                         |                |                  |                                     |   |
| <b>Use (of Substances)</b>              | 1.83 (2.86)             | 0.59 (1.48)    | 0                | 4267.91 (1), <0.001 <sup>d</sup>    | Cohen's d:<br>2.27 (Small) <sup>e</sup> |

<sup>a</sup>Variables significant at  $p \leq 0.05$  are bolded. For nonsignificant results, see text. <sup>b</sup>†Symbol indicates a trend. <sup>c</sup>Higher score indicates more positive coping. <sup>d</sup>GEE analysis, Wald's Chi-square, see data analysis for explanation. <sup>e</sup>Odds ratio for GEE analysis, see data analysis for explanation. The parameter estimates and standard error were 41.80 and 0.64, respectively.

**TABLE II.** SS Satisfaction Ratings: End-of-Session Questionnaire<sup>a</sup>

|  | Client Ratings: Mean (SD) | <i>n</i> <sup>b</sup> | Clinician Ratings: Mean (SD) | <i>n</i> <sup>b</sup> |
|--|---------------------------|-----------------------|------------------------------|-----------------------|
| How helpful was the session?           | 2.05 (0.91)               | 489                   | 2.56 (0.63)                  | 249                   |
| How helpful was the quotation?         | 1.77 (1.05)               | 540                   | 1.82 (0.86)                  | 273                   |
| How helpful was the therapist?         | 2.34 (0.86)               | 542                   |                              |                       |
| How helpful was the SS topic?          |                           |                       |                              |                       |
| Introduction                           | 1.86 (1.02)               | 36                    | 2.52 (0.63)                  | 31                    |
| Safety                                 | 2.04 (0.87)               | 63                    | 2.59 (0.72)                  | 39                    |
| PTSD: Taking Back Your Power           | 2.45 (0.78)               | 29                    | 2.53 (0.63)                  | 17                    |
| Grounding                              | 2.16 (0.86)               | 31                    | 2.61 (0.51)                  | 13                    |
| When Substance Control You             | 2.96 (0.97)               | 17                    | 2.86 (0.38)                  | 7                     |
| Asking for Help                        | 2.55 (0.60)               | 22                    | 3.00 (0.00)                  | 11                    |
| Taking Good Care of Yourself           | 2.39 (0.85)               | 18                    | 2.63 (0.74)                  | 8                     |
| Compassion                             | 1.93 (1.13)               | 29                    | 2.67 (0.50)                  | 9                     |
| Red/Green Flags                        | 2.20 (0.82)               | 25                    | 2.71 (0.47)                  | 14                    |
| Honesty                                | 2.23 (1.07)               | 26                    | 2.91 (0.30)                  | 11                    |
| Recovery Thinking                      | 2.21 (1.13)               | 19                    | 2.33 (0.79)                  | 12                    |
| Integrating the Split Self             | 1.90 (0.87)               | 29                    | 2.50 (0.71)                  | 10                    |
| Commitment                             | 2.16 (0.60)               | 19                    | 2.83 (0.41)                  | 6                     |
| Creating Meaning                       | 2.13 (0.92)               | 23                    | 2.77 (0.60)                  | 13                    |
| Community Resources                    | 1.92 (0.86)               | 13                    | 2.29 (0.76)                  | 7                     |
| Setting Boundaries in Relationships    | 2.24 (0.75)               | 17                    | 2.88 (0.35)                  | 8                     |
| Discovery                              | 2.18 (1.17)               | 11                    | 2.00 (0.82)                  | 7                     |
| Getting Other to Support Your Recovery | 1.86 (0.86)               | 14                    | 2.71 (0.49)                  | 7                     |
| Coping With Triggers                   | 2.11 (0.94)               | 19                    | 2.67 (0.50)                  | 9                     |
| Respecting Your Time                   | 1.92 (1.00)               | 12                    | 2.33 (0.82)                  | 6                     |
| Healthy Relationships                  | 2.50 (0.71)               | 10                    | 2.80 (0.45)                  | 5                     |
| Self-Nurturing                         | 2.25 (0.90)               | 24                    | 2.89 (0.33)                  | 9                     |
| Healing From Anger                     | 2.41 (0.87)               | 17                    | 2.56 (0.73)                  | 9                     |
| The Life Choices Game                  | 2.38 (0.75)               | 8                     | 2.50 (0.58)                  | 4                     |
| Termination                            | 2.33 (1.21)               | 6                     | 2.71 (0.49)                  | 7                     |

<sup>a</sup>Scaled from 0 (not at all) to +3 (a great deal). <sup>b</sup>Refers to number of sessions rated.

(mean = 90.00, SD = 7.07), satisfaction with SS (88.00, SD = 6.70), and comfort implementing SS (89.60, SD = 9.53). The mean score of clinicians (out of 30 points) on the PTSD/SUD Treatment Knowledge Test was 22.22 (SD = 1.72, *n* = 9) at pretreatment, 20.56 (SD = 3.43, *n* = 9) at session 8, and 21.50 (SD = 3.70, *n* = 4) at the end of treatment, with no significant change over time.

## DISCUSSION

This pilot study evaluated SS, a model designed to address PTSD and SUD, in a military setting. Strengths of the trial include representation from four major military branches; the use of psychometrically validated instruments; a one-third minority rate in the patient sample; the use of a relatively large number of clinicians; and rigorous statistical analyses.

We found positive results for most of the variables tested. These included domains of substance use, PTSD symptoms, functioning, psychopathology, and coping. Effect sizes, which indicate the degree of change, were generally in the medium to large range. Our finding of a significant improvement on both PTSD and substance use is especially important as thus far most models tested for PTSD/SUD populations have not shown impact on both.<sup>5</sup> Also, in military medical settings, it is known to be challenging to obtain positive self-

report of substance use and difficult therefore to show change in that domain.

Our results are notable given that SS was conducted in a short time frame averaging 11 sessions. Military hospitals often have short lengths of stay for PTSD and/or SUD, and thus there is a need for models that are feasible within such time frames. Feasibility was also shown by our successful engagement of clinicians who were native to the setting rather than brought in from the outside.<sup>5</sup> The clinicians were able to achieve competence in conducting SS in relatively low-cost ways in terms of amount of training they received. In general, the use of an integrated model for PTSD and SUD, such as SS, may also enhance efficiencies of cost and workforce allocation as both disorders are treated by the same clinician rather than 2 separate clinicians. In this study, too, we found that clinicians drawn from both a SUD and mental health clinic were equally able to learn SS.

Satisfaction with SS was strong and aside from the quantitative data, informal qualitative comments by staff, clients, and program administrators indicated clear feedback that SS fits well in the military treatment environment. Because it is a present-focused, coping skills approach, it does not require patients to tell the narrative of their trauma, which can be emotionally difficult for some patients to tolerate, and can be

contraindicated in the context of current SUD. The resiliency-oriented nature of SS also fits well with the military focus on rapid return of service members to duty. Finally, the fact that SS content addresses both PTSD and SUD means that it can be conducted readily in both mental health and substance abuse programs, as was done in this trial.

A next step in scientific rigor would be an RCT on SS in a military-relevant setting. An RCT could help explore issues we were not able to address in this pilot, such as patient and clinician characteristics that might predict of who does best with SS; and whether some symptoms are quicker to change or moderate outcomes more than others. Also various information was not collected as part of this study, but would be important in a larger trial, such as service member rank; whether the PTSD index events occurred before military service; and the extent, types, and fidelity of TAU services provided in addition to SS. We also emphasize that because of the pilot nature of the study any conclusions drawn must be tempered by this study's limited sample size and absence of a control condition.

In general, more research is needed on military service members with PTSD/SUD. These disorders are some of the most prominent psychological wounds of war. This comorbidity is elevated in military populations, has known serious clinical impact, and often presents challenges to both patients and their clinicians.<sup>30</sup> In the current era there is greater emphasis than ever before on rapidly and aggressively addressing psychological problems before they become chronic.<sup>30</sup> This is progress in and of itself, but it remains a tall task to actually achieve the level of improvement that these service members need and so deserve after all that they have given.

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