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## Posttraumatic Cognitions and Suicidal Ideation among Veterans receiving PTSD Treatment

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### Abstract

With approximately 20 veteran suicide deaths per day, suicidal ideation (SI) among veterans is an important concern. Posttraumatic stress disorder (PTSD) is associated with SI among veterans, yet mechanisms of this relationship remain unclear. Negative posttraumatic cognitions contribute to the development and maintenance of PTSD, yet no studies have prospectively examined the relationship between posttraumatic cognitions and SI. Veterans ( $N = 177$ ; 66% Male) participating in a 3-week intensive outpatient program for PTSD completed assessments of PTSD severity, depressive symptoms, SI, and posttraumatic cognitions. Negative posttraumatic cognitions about the self significantly predicted SI at posttreatment, controlling for pretreatment levels of SI, depression, and PTSD symptom severity. Self-blame and negative posttraumatic cognitions about others/world did not predict SI prospectively. Negative posttraumatic cognitions about the self appear to be an important factor in the manifestation of SI among veterans with PTSD and should be monitored as a potential indicator of suicide risk.

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Suicide is the fourth leading cause of death for adults ages 18–64 in the United States (Centers for Disease Control and Prevention, 2017). Veterans are at an increased risk for suicide (e.g., Black, Gallaway, Bell, & Ritchie, 2011) and reports suggest that 20 veterans die by suicide every day (Department of Veterans Affairs, 2016). A primary risk factor for engaging in suicidal behavior is thinking about suicide, which can be both a short-term ‘warning sign’ (Rudd et al., 2006), as well as a long-term risk factor for suicide (e.g., Beck, Brown, Steer, Dahlsgaard, & Grisham, 1999). Suicidal ideation (SI) in the past two weeks was reported by 12.5% of Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) veterans (Pietrzak et al., 2010) and 13.7% of veterans in the National Health and Resilience in Veterans Study (Smith et al., 2016). These rates exceed the 9.2% lifetime prevalence of SI reported in a representative cross-national sample of adults (Nock et al., 2008).

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Greater rates of SI in the veteran population may be explained by higher rates of posttraumatic stress disorder (PTSD). Epidemiological research suggests that PTSD occurs at a higher rate among veterans and military service members, especially those exposed to combat (Norris & Slone, 2007). For example, representative samples of U.S. civilian adults suggest PTSD prevalence rates between 6.8–7.8% (Kessler et al., 1995, 2005). In contrast, as many as 23% of returning OEF/OIF veterans have a diagnosis of PTSD (Fulton et al., 2015), a rate that is generally consistent with lifetime PTSD estimates for combat veterans of Vietnam (e.g., Kulka et al., 1990) and the Gulf War (e.g., Kang, Natelson, Mahan, Lee, & Murphy, 2003). PTSD is a significant risk factor for SI among OEF/OIF veterans, as Jakupcak et al. (2009) indicated the odds of endorsing SI was four times higher among veterans screening positive for PTSD relative to veterans with negative PTSD screens. Furthermore, treatment studies have shown that SI may improve with successful, evidence-based treatment of PTSD (e.g., Cox et al., 2016; Gradus, Suvak, Wisco, Marx, & Resick, 2013; Horwitz, Miron, & Maieritsch, 2019), but the mechanisms behind these findings are not currently well understood.

Negative posttraumatic cognitions have been hypothesized to be a key mechanism by which PTSD is developed and maintained (e.g., Brewin & Holmes, 2003; Dalgleish, 2004). Following the experience of a traumatic event, individuals engage in meaning-making processes in which they attempt to integrate their experiences with existing beliefs. Unsuccessful integration of traumatic experiences in existing belief systems has been proposed to increase self-blame and the development of negative beliefs about oneself, others, and the world (Ehlers & Clark, 2000). Consequently, negative posttraumatic cognitions are an important treatment target (Resick, Monson, & Chard, 2016), and research has demonstrated that reductions in self-blame and negative beliefs about the self precede PTSD symptom change (e.g., Schumm, Dickstein, Walter, Owens, & Chard, 2015; Zalta et al., 2014). Moreover, Scher, Suvak, and Resick (2017) found that negative trauma-related beliefs associated with guilt, mistrust, and self-worth predicted PTSD symptoms a decade following treatment.

Negative cognitions are a key component of Wenzel and Beck's (2008) cognitive model of suicidal behavior, whereby maladaptive cognitions lead to an attentional fixation or preoccupation with suicide. Similarly, the Interpersonal Theory of Suicide (Van Orden et al., 2010) suggests that negative cognitions regarding burdensomeness and lack of belongingness drive suicidal desire. Suicide risk has also been indicated through specific negative cognitive patterns such as rumination (e.g., Miranda & Nolen-Hoeksema, 2007; Rogers & Joiner, 2017) and hopelessness (Brown, Beck, Steer, & Grisham, 2000; Horwitz, Berona, Czyz, Yeguez, & King, 2017). As such, it is critical that interventions target the specific cognitions driving suicidal ideation for a particular population. Given the mechanistic role negative cognitions play in PTSD and depression, it is not surprising that depressive symptoms and SI are reduced in the context of successful PTSD treatment (e.g., Cox et al., 2016; Gradus et al., 2013).

While there are clear associations between SI, PTSD, and negative posttraumatic cognitions, the strength and directionality of these relationships have not been well-established. Only one study has examined the relationship between negative posttraumatic cognitions and SI.

McLean et al. (2017) examined the interrelationships between PTSD, SI, negative posttraumatic cognitions, and depression, among treatment-seeking active duty military personnel with PTSD, and found that the positive relationship between PTSD symptoms and SI was fully accounted for by negative posttraumatic cognitions about the self. Depression symptoms also had a direct positive effect on SI. However, due to the cross-sectional design, the directionality of these relationships could not be determined (McLean et al., 2017). To date, no study has prospectively examined negative posttraumatic cognitions as a predictor of SI. The aims of the present study were to 1) examine the associations between negative posttraumatic cognitions and SI, controlling for severity of PTSD and depression symptoms, and 2) determine whether negative posttraumatic cognitions at pretreatment prospectively predict SI at posttreatment, controlling for pretreatment SI, depression, and PTSD symptoms.

## Materials and Methods

### Participants

The sample for the present study consisted of 177 veterans and service members (94% discharged/retired; 6% on active duty, reserves, or National Guard; henceforth collectively referred to as “veterans”) who completed a 3-week intensive outpatient treatment program for PTSD between January 2016 and October 2017 at a private Midwestern not-for-profit academic medical center. The majority of the sample identified as male (66%) and the average age was 41.7 ( $SD = 9.4$ ) years. Racial/ethnic distribution was as follows: 54% White, 20% Black, 19% Hispanic, 7% Other. Most participants were unemployed and looking for work (67%) and 39% had a Bachelor’s degree or higher in education. About half the sample was married (49%). Regarding military service, 88% served during the post-9/11 era, 66% served in the Army, 68% were mid-level enlisted (E4-E6), and 96% were medically or honorably discharged.

### Measures

**Negative Posttraumatic Cognitions**—Negative posttraumatic cognitions were assessed using the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). The PTCI is a 33-item self-report measure that asks individuals to rate maladaptive beliefs that may develop after exposure to a traumatic event from 1 (*totally disagree*) to 7 (*totally agree*). The PTCI consists of three subscales: self-blame, negative cognitions about self (henceforth referred to as “negative-self”), and negative beliefs about others and the world (henceforth referred to as “negative-world”). Sample items include, “The event happened because of the way I acted” (self-blame), “There is something wrong with me as a person” (negative-self), and “You can never know who will harm you” (negative-world). The PTCI has demonstrated strong psychometric properties (Foa et al., 1999). The negative-self, negative-world, and self-blame subscales on the PTCI had good to excellent internal consistency ( $\alpha = .93$ ,  $\alpha = .78$ ,  $\alpha = .69$ , respectively).

**PTSD Severity**—PTSD severity was assessed using the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item self-report measure that asks individuals rate their PTSD symptoms in relation to their index trauma over the previous

month from 0 (*not at all*) to 4 (*extremely*). The PCL-5 has been shown to be a reliable and valid measure of PTSD symptom severity in veteran and military populations (e.g., Bovin et al., 2016). The PCL-5 had high internal consistency ( $\alpha = .89$ ) in the current sample.

**Depression Severity**—Depression severity was assessed using the Patient Health Questionnaire-8 (PHQ-8; Kroenke et al., 2009). The PHQ-8 is an 8-item self-report measure that asks individuals to rate the frequency of depressive symptoms over the past two weeks from 0 (*not at all*) to 3 (*nearly every day*). The PHQ-8 has been shown to be a reliable and valid measure of depression symptom severity in a wide range of populations, including veterans (e.g., Wells, Horton, LeardMann, Jacobson, & Boyko, 2013). The PHQ-8 had strong internal consistency in the current sample ( $\alpha = .80$ ).

**Suicidal Ideation**—SI was assessed using the ninth item from the Patient Health Questionnaire-9 (PHQ9-9, “thoughts that you would be better off dead or hurting yourself in some way”; Kroenke, Spitzer, & Williams, 2001). Individuals are asked to rate the frequency over the past two weeks from 0 (*not at all*) to 3 (*nearly every day*). This item has been used as a measure of SI in military samples (e.g., Maguen et al., 2011; Pietrzak et al., 2010) and has predictive validity for nonfatal and fatal suicide attempts (e.g., Simon et al., 2013).

## Procedures

The data for the present study were collected as part of standard intake and post-treatment assessments to evaluate treatment effectiveness of a three-week intensive outpatient PTSD program. The intake assessment occurred within two weeks of the program start date and the post-treatment assessment occurred on the final day of the program. All study procedures were approved by the Institutional Review Board with a waiver of consent because all assessments were collected as part of routine clinical care procedures. Participants had a confirmed PTSD diagnosis via a Clinician-Administered PTSD Scale (CAPS-5; Weathers et al., 2017) prior to starting the program. Reasons for non-acceptance into the program include unmanaged psychosis, active substance abuse that would interfere with ability to participate or pose risk of physiological withdrawal, cognitive or medical conditions that required a higher level of care, or reported active/recent suicidal or homicidal intentions. During the 3-week intensive outpatient program, veterans are scheduled to receive 15 sessions of individual Cognitive Processing Therapy (Resick et al., 2016), 13 sessions of group Cognitive Processing Therapy, 13 sessions of mindfulness classes adapted from the Mindfulness-Based Stress Reduction (Kabat-Zinn, 2003) curriculum, and 12 sessions of yoga. In addition, participants attend several other educational classes on topics, such as medication management, sleep hygiene, and communication skills. Detailed descriptions of the intake process, treatment services, and treatment outcomes have been previously described (Harvey et al., 2017; Zalta et al., under review).

## Data Analysis

Data was analyzed using SPSS version 22. *T*-tests and chi-square analyses were used to examine differences in demographic and military characteristics between those with any SI (PHQ9-9 = 1) and those with no SI (PHQ9-9 = 0) at pretreatment assessment. Correlations examined the bivariate relationships between SI (scored 0–3), PTSD symptoms, depression

symptoms, and posttraumatic cognitions at pretreatment and posttreatment. Due to the non-normal distribution from a single-item measure, SI was dichotomized based on any (PHQ9-9 = 1) or no (PHQ9-9 = 0) SI when examined as a dependent variable in the multivariate binary logistic regressions. Due to multicollinearity concerns among PTCI subscales (intercorrelation ranges from .69 – .86), these variables were not examined simultaneously in multivariate analyses. Binary logistic regressions examined associations with pretreatment SI and included pretreatment depression symptoms and PTSD symptoms in the first step. Three separate models then examined the incremental influence of a PTCI subscale. Similarly, binary logistic regressions examined associations with posttreatment SI and included pretreatment depression and PTSD symptoms, as well as pretreatment SI (scaled 0–3) in the first step. Three separate models then examined the incremental influence of a PTCI subscale. Homer-Lemeshow tests for logistic regressions indicated that the data fit the model well. Collinearity assumptions were met for all variables included in regression analyses ( $VIF < 2.5$  for all covariates).

## Results

### Sample Characteristics and Bivariate Analyses

Table 1 includes descriptive information regarding sample demographics and military characteristics. There were no differences in those with or without SI regarding age ( $t = -1.85, p = .066$ ), sex, education, employment, or marital status. There were also no differences based on military branch, rank, and military status. Those identifying as “Other” for race/ethnicity were more likely to endorse SI; there were no differences between those identifying as White, Black, or Hispanic. Veterans from the pre-9/11 era were also more likely to endorse SI than those from the post-9/11 era (see Table 1). Bivariate correlations examined relationships between depression, PTSD symptom severity, SI, and the PTCI subscales at pretreatment and posttreatment assessments (see Table 2). Pretreatment scores on all three PTCI subscales had significant correlations with SI at pretreatment and posttreatment ( $r = .18$  to  $.37$ ). Negative-self cognitions had the strongest correlations with SI among the PTCI subscales ( $r = .37$  at pretreatment and  $r = .32$  at posttreatment). At pretreatment, 84 (47%) veterans endorsed any SI in the past two weeks and 50 (28%) endorsed any SI at the posttreatment assessment. There were 43 (25%) veterans who reported SI at both assessments, 41 (23%) who denied SI at posttreatment after reporting SI at pretreatment, and 7 (4%) who denied SI at pretreatment and reported SI at posttreatment. The remaining veterans denied SI at both assessments. These changes in endorsement from pretreatment to posttreatment were statistically significant in a McNemar chi-square analysis ( $\chi^2 = 22.68, df = 1, p < .001$ ; OR(95% CI) = 5.86 (2.63, 13.06).

### Logistic Regressions Examining Pretreatment Associations with Suicidal Ideation

Three hierarchical binary logistic regressions were conducted to examine the concurrent relationship between negative posttraumatic cognitions and SI at pretreatment (see Table 3). The first step, which contained pretreatment scores of depression and PTSD symptom severity, was significant ( $\chi^2 = 22.26, df = 2, p < .001$ ; Nagelkerke  $R^2 = .158$ ). Depression [OR (95% CI) = 1.17 (1.07, 1.29),  $p = .001$ ] was significantly associated with SI in this first step, PTSD symptom severity was not [OR (95% CI) = 1.01 (0.97, 1.05),  $p = .611$ ]. Step 2 of

Model 1 included posttraumatic negative-self cognitions and significantly improved model fit,  $\chi^2(1) = 10.70, p = .001$ , contributing an additional 6.9% of the variance. Pretreatment scores of posttraumatic negative-self cognitions and depression were significantly associated with pretreatment SI. Step 2 of Model 2 included posttraumatic negative-world cognitions and did not significantly improve model fit,  $\chi^2(1) = 2.25, p = .133$ . Only pretreatment scores of depression were significantly associated with pretreatment SI. Step 2 of Model 3 included posttraumatic self-blame cognitions and significantly improved model fit,  $\chi^2(1) = 6.57, p = .010$ , contributing an additional 4.2% of the variance. Pretreatment scores of posttraumatic self-blame cognitions and depression were significantly associated with pretreatment SI.

### Logistic Regressions Predicting Posttreatment Suicidal Ideation

Three hierarchical binary logistic regressions were conducted to examine the prospective associations between pretreatment SI, depression, PTSD symptom severity, and posttraumatic cognitions with posttreatment SI (see Table 4). The first step, which contained pretreatment scores of SI (scored 0–3), depression, and PTSD symptom severity, was significant ( $\chi^2 = 31.80, df = 3, p < .001$ ; Nagelkerke  $R^2 = .238$ ). Pretreatment SI [OR (95% CI) = 2.87 (1.87, 4.41),  $p < .001$ ] was the lone significant independent predictor. Step 2 of Model 1 included posttraumatic negative-self cognitions and significantly improved model fit,  $\chi^2(1) = 5.03, p = .025$ , contributing an additional 3.4% of the variance. Pretreatment scores of posttraumatic negative-self cognitions and SI were significantly associated with posttreatment SI. Step 2 of Model 2 included posttraumatic negative-world cognitions and significantly improved model fit,  $\chi^2(1) = 3.95, p = .047$ , contributing an additional 2.7% of the variance; however, only pretreatment scores of SI were significantly associated with posttreatment SI. Step 2 of Model 3 included posttraumatic self-blame cognitions and did not significantly improve model fit,  $\chi^2(1) = 1.87, p = .171$ . Only pretreatment scores of SI were significantly associated with posttreatment SI.

### Discussion

In our study, negative posttraumatic cognitions, particularly negative thoughts about the self (e.g., “there is something wrong with me as a person”; “I have permanently changed for the worse”), had significant concurrent and longitudinal associations with SI in veterans receiving trauma-focused treatment for PTSD. The relationship between negative posttraumatic cognitions about the self and SI held after controlling for severity of PTSD and depression symptoms, as well as pretreatment SI in longitudinal analyses. Depression did not predict posttreatment SI in longitudinal analyses. These findings suggest that negative posttraumatic cognitions about the self may be a significant contributor to suicide risk among veterans with PTSD, and potentially a better indicator of future risk than comorbid depressive symptoms.

While posttraumatic self-blame cognitions were significantly associated with pretreatment SI in multivariate analyses, they did not predict SI at posttreatment when controlling for pretreatment SI. This was somewhat unexpected, as self-blame has been demonstrated as a significant predictor of SI in clinically severe samples (e.g., Horwitz, Czyz, Berona, & King, 2018). It may be that among veterans with PTSD, SI is more strongly tied to global beliefs

about the self rather than beliefs regarding actions, inactions, or causes of a specific trauma. Alternatively, improvement in posttraumatic cognitions over the course of treatment may have made the prediction of posttreatment outcomes from pretreatment assessments more challenging. Negative posttraumatic cognitions about the world also did not predict SI in multivariate analyses. Overall, these findings are consistent with those reported by McLean and colleagues (2017), whereby negative posttraumatic cognitions about the self had the strongest associations with SI.

Unexpectedly, PTSD symptoms were not uniquely associated with SI in multivariate analyses. A review by Krysinska and Lester (2010) indicated that PTSD was associated with an increased risk for suicidal thoughts and behaviors. Furthermore, a meta-analysis by Panagioti, Gooding, and Tarrrier (2012) indicated strong associations between PTSD and suicide risk, with depression explained as a compounding risk factor for suicide in PTSD populations. Given that all participants in this study were diagnosed and entering treatment for PTSD, there may have been more variability in depression scores, which allowed for better prediction of SI relative to PTSD symptom severity at pretreatment. Further, it is possible that SI may not differ substantially once moderate-severe symptoms of PTSD are established.

Taken together, our findings indicate that negative posttraumatic cognitions about the self may be an important target in the assessment and treatment of veterans receiving treatment for PTSD. Past studies have shown that a reduction in negative posttraumatic cognitions is associated with a reduction in PTSD symptoms (e.g., Scher et al., 2017; Schumm et al., 2015; Zalta et al., 2014), and that a reduction in PTSD symptoms is associated with a reduction in SI (e.g., Cox et al., 2016; Gradus et al., 2013). Further research is needed to determine the extent by which reductions in posttraumatic negative-self cognitions correspond to a reduction in SI over the course of treatment for veterans with PTSD. This may have significant clinical implications for determining treatment approaches for those with PTSD and comorbid SI, as the process of restructuring posttraumatic cognitions differs across trauma-focused treatments. Gradus et al. (2013) found that those receiving CPT experienced significantly greater reductions in SI over time as compared to those receiving Prolonged Exposure (PE). Similarly, Gallagher and Resick (2012) found that, relative to PE, CPT was associated with significantly greater reductions in hopelessness during treatment. Yet, studies have also shown significant reductions in posttraumatic cognitions following PE (e.g., Foa & Rauch, 2004). Well-controlled randomized studies are needed to provide the best guidance for treatment approaches with PTSD patients experiencing SI.

## Limitations

While there were many strengths in this study, including a naturalistic sample of veterans and longitudinal design, study findings should be interpreted within the context of several limitations. An important limitation concerns the measurement of SI, which was defined by a single item that did not distinguish between thoughts of suicide, thoughts of non-suicidal self-harm, and a desire to be dead. It also was unable to separate passive suicidal thoughts from suicidal thoughts with active intent or a plan. A more thorough assessment of suicidal thoughts would provide improved specificity and greater insight into the severity of suicidal



thoughts. Our sample was comprised of veterans and service members, and it is unclear whether findings would extend to non-military populations with PTSD diagnoses. Furthermore, individuals with suicidal thoughts necessitating a higher level of care (e.g., active intent, plan), as well as those with unmanaged substance use, were excluded from program participation and findings may not generalize to those with more severe presentations of risk. Finally, it should be noted that despite statistically significant associations, negative posttraumatic cognitions about the self only explained a small portion of the variance (3.4–6.9%) in SI. Given that most individuals who experience SI do not make suicide attempts (e.g., Ten Have et al., 2009), additional research is needed to determine the extent to which posttraumatic cognitions influence suicidal behaviors.

## Conclusions

Rates of PTSD and SI are elevated among military samples and a greater understanding of the mechanisms by which PTSD is related to SI is needed. Our study was the first to prospectively examine associations between posttraumatic cognitions and SI. Our findings indicate that negative posttraumatic cognitions about the self may be a significant mechanism by which PTSD and SI are associated, suggesting a need to assess, monitor, and target these cognitions during the course of PTSD treatment. Further research is needed in high-risk samples to determine whether our findings extend to suicidal behaviors.

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**Table 1**

## Demographics and Pretreatment Clinical Symptoms by Presence of Suicidal Ideation

Characteristics	n	No SI (n = 92) %	Any SI (n = 85) %	$\chi^2$ (df)
Sex				1.77 (1)
Male	117	55.6	44.4	
Female	60	45.0	55.0	
Race/Ethnicity				<sup>a</sup> 9.38 (3) *
White	96	51.0	49.0	
Black	35	51.4	48.6	
Hispanic	34	67.6	32.4	
Other	12	16.7	83.3	
Marital Status				3.03 (1)
Married	90	45.6	54.4	
Not Married	87	58.6	41.4	
Education				2.25 (1)
Associate's or less	108	56.5	43.5	
Bachelor's or more	69	44.9	55.1	
Employment				0.01 (1)
Employed/Retired	58	51.7	48.3	
Unemployed	119	52.1	47.9	
Military Branch				0.05 (1)
Army	116	52.6	47.4	
Non-Army	61	50.8	49.2	
Military Rank				0.23 (2)
E1 – E3	24	50.0	50.0	
E4 - E9	141	52.5	47.5	
Officer	11	45.5	54.5	
Service Era				5.23 (1) *
Post-9/11	156	55.1	44.9	
Pre-9/11	21	28.6	71.4	
Military status				1.48 (1)
Discharged/Retired	161	53.4	46.6	
Active duty/Reserves	16	37.5	62.5	

Note.

\* p < .05

\*\* p < .01

\*\*\* p < .001

No SI: PHQ9-9 score = 0 at pretreatment; Any SI: PHQ9-9 = 1 at pretreatment.

<sup>a</sup>Based on post-hoc tests, differences were attributable to "Other" group; there were no differences between the three primary race/ethnicity groups.

**Table 2**  
Correlations between Depression, PTSD symptoms and Posttraumatic Cognitions

	Mean (SD)	Pre SI	Pre Dep	Pre PTSD	Pre PTCI-NS	Pre PTCI-NW	Pre PTCI-SB
Pre SI	0.8 (1.0)	---	---	---	---	---	---
Pre Dep	16.9 (4.4)	.42***	---	---	---	---	---
Pre PTSD	57.5 (11.2)	.29***	.59***	---	---	---	---
Pre PTCI-NS	87.6 (24.4)	.37***	.47***	.51***	---	---	---
Pre PTCI-NW	36.5 (7.1)	.18*	.34***	.46***	.71***	---	---
Pre PTCI-SB	21.7 (6.2)	.28***	.40***	.52***	.86***	.69***	---
Post SI	0.4 (0.7)	.44***	.20**	.19*	.32***	.24**	.25**
Post Dep	11.9 (5.6)	.21**	.37***	.29***	.28***	.31***	.27***
Post PTSD	41.0 (18.5)	.23**	.37***	.36***	.34***	.39***	.27***
Post PTCI-NS	70.7 (30.2)	.25**	.27***	.32***	.41***	.39***	.35***
Post PTCI-NW	30.0 (10.3)	.12	.22**	.28***	.28***	.43***	.27***
Post PTCI-SB	17.0 (7.4)	.20**	.25**	.29***	.34***	.37***	.33***

Note:

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ ;

Pre = pretreatment, Post = posttreatment

SI = Suicidal ideation (PHQ-9; range 0–3); Dep = Depression (PHQ-8; range 0–24); PTSD (PCL-5; range 0–80); PTCI-NS = negative posttraumatic cognitions about the self (range 21–147); PTCI-NW = negative posttraumatic cognitions about the world/others (range 7–35); PTCI-SB = posttraumatic self-blame cognitions (range 5–25).

**Table 3**

Pretreatment Associations between Posttraumatic Cognitions and Any Suicidal Ideation

Variables	Step 1				Step 2				R <sup>2</sup>
	B	SE(B)	Wald $\chi^2$	R <sup>2</sup>	B	SE(B)	Wald $\chi^2$	OR (95% CI)	
<b>Model 1</b>				.158					+ .069
PTSD	.009	.018	0.26		-.010	.019	0.25	0.99 (.95, 1.03)	
Depression	.160	0.48	11.24**		.129	.049	7.02	1.14 (1.03, 1.25)**	
PTCI-NS	---	---	---		.027	.008	9.98	1.03 (1.01, 1.04)**	
<b>Model 2</b>				.158					+ .015
PTSD	.009	.018	0.26		0.00	0.19	0.00	1.00 (.96, 1.04)	
Depression	.160	0.48	11.24**		.155	.048	10.52	1.17 (1.06, 1.28)**	
PTCI-NW	---	---	---		.039	.026	2.22	1.04 (.99, 1.09)	
<b>Model 3</b>				.158					+ .042
PTSD	.009	.018	0.26		-.008	.019	0.18	0.99 (.96, 1.03)	
Depression	.160	0.48	11.24**		.147	.048	9.52	1.16 (1.06, 1.27)**	
PTCI-SB	---	---	---		.081	.032	6.20	1.08 (1.02, 1.16)*	

Note:

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ ;

Wald  $\chi^2$  values are degrees of freedom (1); R<sup>2</sup> = Nagelkerke R-Squared; Depression (PHQ-8 score); PTSD (PCL-5 score); PTCI-NS = Negative posttraumatic cognitions about the self subscale score; PTCI-NW = negative posttraumatic cognitions about the world/others subscale score; PTCI-SB = posttraumatic self-blame cognitions subscale score.

**Table 4**  
 Pretreatment Posttraumatic Cognitions as Predictors of Any Suicidal Ideation at Posttreatment

Variables	Step 1				Step 2				
	B	SE(B)	Wald $\chi^2$	R <sup>2</sup>	B	SE(B)	Wald $\chi^2$	OR (95% CI)	R <sup>2</sup>
<b>Model 1</b>									
SI (0-3)	1.055	.219	23.27***	.238	.987	.221	19.89	2.68 (1.74, 4.14)***	+.034
Depression	-.015	.056	0.07		-.039	.057	0.46	0.96 (.86, 1.07)	
PTSD	-.006	.021	0.09		-.022	.022	1.02	0.98 (.94, 1.02)	
PTCLNS	---	---	---		.021	.010	4.78	1.02 (1.00, 1.04)*	
<b>Model 2</b>									
SI (0-3)	1.055	.219	23.27***	.238	1.068	.220	23.67	2.91 (1.89, 4.48)***	+.027
Depression	-.015	.056	0.07		-.021	.057	0.14	0.98 (.88, 1.09)	
PTSD	-.006	.021	0.09		-.022	.023	0.93	0.98 (.94, 1.02)	
PTCI-NW	---	---	---		.060	.031	3.73	1.06 (0.99, 1.13)	
<b>Model 3</b>									
SI (0-3)	1.055	.219	23.27***	.238	1.033	.219	22.29	2.81 (1.83, 4.32)***	+.013
Depression	-.015	.056	0.07		-.023	.056	0.17	0.98 (.88, 1.09)	
PTSD	-.006	.021	0.09		-.017	.022	0.59	0.98 (.94, 1.03)	
PTCI-SB	---	---	---		.049	.036	1.82	1.05 (.98, 1.13)	

Note:

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ ;

Wald  $\chi^2$  values are degrees of freedom (1); R<sup>2</sup> = Nagelkerke R-Squared SI = Suicidal ideation (PHQ-9 score); Depression (PHQ-8 score); PTSD (PCL-5 score); PTCI-NS = Negative posttraumatic cognitions about the self subscale score; PTCI-NW = negative posttraumatic cognitions about the world/others subscale score; PTCI-SB = posttraumatic self-blame cognitions subscale score.