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Research report

Improving the detection and prediction of suicidal behavior among military personnel by measuring suicidal beliefs: An evaluation of the Suicide Cognitions Scale

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ABSTRACT

Background: Newer approaches for understanding suicidal behavior suggest the assessment of suicide-specific beliefs and cognitions may improve the detection and prediction of suicidal thoughts and behaviors. The Suicide Cognitions Scale (SCS) was developed to measure suicide-specific beliefs, but it has not been tested in a military setting.

Methods: Data were analyzed from two separate studies conducted at three military mental health clinics (one U.S. Army, two U.S. Air Force). Participants included 175 active duty Army personnel with acute suicidal ideation and/or a recent suicide attempt referred for a treatment study (Sample 1) and 151 active duty Air Force personnel receiving routine outpatient mental health care (Sample 2). In both samples, participants completed self-report measures and clinician-administered interviews. Follow-up suicide attempts were assessed via clinician-administered interview for Sample 1. Statistical analyses included confirmatory factor analysis, between-group comparisons by history of suicidality, and generalized regression modeling.

Results: Two latent factors were confirmed for the SCS: Unloveability and Unbearability. Each demonstrated good internal consistency, convergent validity, and divergent validity. Both scales significantly predicted current suicidal ideation ($\beta s > 0.316$, $ps < 0.002$) and significantly differentiated suicide attempts from nonsuicidal self-injury and control groups ($F(6, 286)=9.801$, $p<0.001$). Both scales significantly predicted future suicide attempts (AORs > 1.07, $ps < 0.050$) better than other risk factors.

Limitations: Self-report methodology, small sample sizes, predominantly male samples.

Conclusions: The SCS is a reliable and valid measure that predicts suicidal ideation and suicide attempts among military personnel better than other well-established risk factors.

1. Introduction

Death by suicide has accounted for a rising proportion of all deaths among military personnel since 2005 (Armed Forces Health Surveillance Center, 2012). Research on military suicide has, to date, largely adopted approaches that focus on the relationship of psychiatric disorders and their symptoms (e.g., depression, PTSD) with subsequent suicidal behavior (Department of Defense, 2011; LeardMann et al., 2013; Skopp et al., 2012). However, this syndrome-based approach is limited in light of evidence that the considerable majority of individuals with psychiatric conditions and symptoms will not make suicide attempts or die by suicide (e.g., Goldsmith et al., 2002).

A more contemporary, transdiagnostic approach to understanding suicide risk is *fluid vulnerability theory* (Rudd, 2006),

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which posits that some individuals are more sensitized or "vulnerable" to suicidal behaviors, and this vulnerability persists over time independent of the individual's specific psychiatric symptom profile. Contributing to this persistent vulnerability is one's cognitive style or pattern of assumptions about one's self, others, and the world, which Rudd has termed the "suicidal belief system." A growing body of research supports the assertion that measuring suicide-specific thought processes independent of psychiatric symptoms and disorders may improve assessment, treatment, and clinical decision-making. For instance, the role of hopelessness is now well established (Brown et al., 2000; Bryan & Rudd, 2006), and more recent empirical work has supported the incremental utility of perceived burdensomeness (e.g., "People would be better off without me") over psychiatric symptoms (Joiner et al., 2009). This has been confirmed in military samples as well (Bryan et al., 2010, 2012). More rigorous investigation among military personnel of the suicidal belief system, beyond hopelessness and perceived burdensomeness, may therefore yield improvements in the detection, assessment, prediction, and treatment of suicidal thoughts and behaviors in this population.

The Suicide Cognitions Scale (SCS) was recently developed to measure the suicidal belief system (Rudd et al., in press). Items were selected based on observation of common statements and verbalizations by suicidal patients across treatment settings. The SCS is believed to measure two underlying dimensions of the suicidal belief system, *Unloveability* and *Unbearability,* which is supported by exploratory and confirmatory factor analyses conducted in several non-military samples including college students and psychiatric inpatients (Rudd et al., in press). Unloveability entails the perception that one is worthless, defective, and fundamentally flawed (e.g., "I don't deserve to live another moment"; "I am completely unworthy of love"), consistent with notions of self-hatred and shame, whereas unbearability entails the perception that one is incapable of tolerating distress (e.g., "I can't stand this pain anymore"; "I can't tolerate being this upset any longer"). In contrast to measuring situation-specific beliefs and assumptions (e.g., hopelessness), the SCS measures identity-based beliefs and assumptions that confer long-term vulnerability to suicidal thoughts and behaviors independent of an individual's emotional state. According to the fluid vulnerability theory, identity-based beliefs should be associated with suicidal behaviors over the long term because they tend to be more persistent and enduring. Consistent with this hypothesis, preliminary evaluations of the SCS in non-military samples confirm that it incrementally predicts current suicidal ideation and future suicide attempts, and it differentiates those with and without a history of suicide attempt (Rudd et al., in press). To date, however, the SCS has not been evaluated or used with military personnel.

The current analysis examined the clinical utility of measuring suicide-specific beliefs and cognitions with the SCS among military personnel in two separate clinical samples. It was hypothesized that the SCS would demonstrate good psychometric properties and would improve the detection and prediction of suicidal thoughts and behaviors among military personnel.

2. Methods

2.1. Participants and procedures

2.1.1. Sample 1

Participants for Sample 1 were comprised of active duty U.S. Army personnel referred for a baseline intake evaluation as a part of a prospective, randomized controlled trial testing the efficacy of a brief cognitive-behavioral therapy for the prevention of suicide attempts at an Army mental health clinic in the western United States. Participants were referred by Army mental health professionals following participants' discharge from inpatient psychiatric hospitalization for acute suicidal ideation and/or a suicide attempt. Of 204 soldiers referred to the study, 175 (85.8%) consented to participate in the baseline evaluation. Data for this 2-year prospective study were acquired from all 175 participants who completed the baseline evaluations. Follow-up suicide attempts during the subsequent 2 years were determined via structured clinician-administered interviews (described below). Data were entered directly into a secured, electronic database located at The University of Texas Health Science Center at San Antonio. Demographic descriptive statistics are summarized in Table 1. Regulatory approval for this study was received from the Madigan Army Medical Center Institutional Review Board.

2.1.2. Sample 2

Participants for Sample 2 were comprised of 151 active duty U.S. Air Force personnel in outpatient mental health treatment at two Air Force clinics in the southern and western United States. Patients were invited by their mental health providers to complete an anonymous survey packet immediately after their mental health appointments. Patients agreeing to participate (151 out of 176 invited; 85.8% response rate) filled out a survey packet in the waiting room and then returned the completed packet to a secured box located at the front desk. Surveys were then shipped to the National Center for Veterans Studies at the University of Utah for entry into a secured, electronic database. No follow-up data were collected for Sample 2. Demographic descriptive statistics are summarized in Table 1. Regulatory approval for this study was received from the Wright-Patterson Air Force Base Institutional Review Board.

2.2. Instruments

2.2.1. Sample 1

2.2.1.1. Suicide Attempt Self-Injury Scale (SASII). Follow-up suicide attempts were assessed with the SASII (Linehan et al., 2006), which is a structured clinical interview designed to assess the factors involved in nonfatal suicide attempts and intentional self-

Table 1
Participant descriptors for both samples.

Variable	*N* (%)	
	Sample 1 (*N*=175)	Sample 2 (*N*=151) [a]
Gender		
Male	152 (86.9)	95 (62.9)
Race		
Caucasian	124 (70.9)	101 (66.9)
African–American	23 (13.1)	31 (20.5)
American Indian	8 (4.6)	3 (2.0)
Pacific Islander	4 (2.3)	2 (1.3)
Asian	3 (1.7)	2 (1.3)
Other	14 (8.0)	9 (6.1)
Hispanic ethnicity		
Hispanic	51 (29.1)	14 (9.3)
Rank		
E1–E4	128 (73.1)	33 (21.8)
E5–E6	40 (22.9)	61 (40.4)
E7–E9	6 (3.4)	24 (15.9)
Officer	1 (0.6)	30 (19.9)
No. of deployments		
0	33 (18.9)	65 (43.0)
1	68 (38.9)	38 (25.2)
2	41 (23.4)	25 (16.6)
3	21 (12.0)	13 (8.6)
4+	12 (6.9)	10 (6.6)

[a] Demographic data were missing from three participants.