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TEMPERAMENT, CHARACTER, AND SUICIDALITY AMONG CROATIAN WAR VETERANS WITH POSTTRAUMATIC STRESS DISORDER

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SUMMARY

Background: *The occurrence of suicidal thoughts and behaviors is rather frequent among war veterans, particularly those suffering from posttraumatic stress disorder (PTSD). Understanding factors present within these individuals that increase suicide risk may inform prevention efforts. The present study aimed to determine whether the dimensions of temperament and character are associated with various aspects of suicidality among Croatian war veterans with PTSD.*

Subjects and methods: *A sample of 72 Croatian male war veterans (mean age 52.33 years) diagnosed with PTSD was gathered at the National Center for Psychotrauma between May and October 2014. The participants completed the Temperament and Character Inventory - Revised (TCI-R) and the Suicidal Behaviors Questionnaire - Revised (SBQ-R).*

Results: *Zero-order analyses revealed that temperament dimension Harm avoidance and character dimension Self-directedness were moderately associated with the total risk for suicide (i.e., the SBQ-R total score), while Persistence and Cooperativeness showed significant but weaker relations. Different dimensions of suicidality were associated with different personality traits. Harm Avoidance was shown to be significantly increased among the subgroup of war veterans with high suicidal risk.*

Conclusions: *Notwithstanding some limitations of this study, these findings could help extend our understanding of the elevated suicide risk in war veterans with PTSD. Detection of individuals displaying high Harm Avoidance and low Self-Directedness might facilitate prevention of suicidal behaviors in this population.*

Key words: *temperament – character – personality – suicide – war veterans – PTSD – Croatia*

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INTRODUCTION

Suicide rates have risen considerably in the military population, surpassing civilian rates for the first time since the Vietnam War (Kuehn 2010). Suicidal ideation and attempts are associated with psychiatric disorders in the population of war veterans (Ramsawh et al. 2014), with approximately 80% of suicide attempters and two-thirds of ideators having a preexisting psychiatric condition (Nock et al. 2010). Posttraumatic stress disorder (PTSD) is one of the most common psychiatric disorders found in the military population, as well as a known risk factor for suicidality among war veterans (Bryan & Corso 2011, Guerra et al. 2011). For example, rates of lifetime or current suicidal ideation previously found in veterans with PTSD were 33-46% (Guerra et al. 2011). In fact, a recent systematic review of 80 studies indicated that having a history of PTSD is associated with significant morbidity and mortality, including increased risk for suicidal ideation, attempts, and completed suicides in war veterans (Pompili et al. 2013). These relationships remain after adjusting for psychiatric comorbidity (e.g., depression) (Ramsawh et al. 2014). Particularly relevant for Croatian war veterans, having in mind that the Croatian Homeland war ended in 1995, is the fact that symptoms of PTSD and higher risk for suicide may persist for many years after their deployment (Price et al. 2004, Lončar et al. 2014).

Empirical evidence has pointed to a wide range of predisposing factors for suicidality among military populations, such as genetic factors, combat experiences, physical injury, post-deployment stress, and psychiatric comorbidity (Sher 2009, Jakovljevic et al. 2012, Pompili et al. 2013). Some of the predisposing/protective factors for the development and expression of PTSD, as well as for suicidal behavior lie in the structure of personality (Brezo et al. 2006, Jakšić et al. 2012). Prior studies have documented the roles of Harm Avoidance (HA)/Neuroticism, Novelty Seeking (NS)/ Impulsivity, and Self-Directedness (SD) in suicidal behavior (Brezo et al. 2006, Courtet et al. 2011, Perroud et al. 2013). HA is closely related to the concept of negative emotionality, and is a measure of behavioral inhibition associated with anxiety-proneness in the context of stress and frustration. NS reflects the experience of intense excitement in response to novel and complex stimuli, while SD refers to one's awareness of being an autonomous individual and fulfilling life goals in a purposeful and responsible way (Cloninger et al. 1993). However, only a small number of these studies were conducted with war veterans, mostly from the perspective of the Big-Five personality model. For example, Soltaninejad et al. (2014) have investigated the role of personality traits among Iranian military personnel, suggesting that Neuroticism might increase suicide risk, whereas Extraversion and Conscientiousness

were associated with a reduced risk of suicide. Personality traits, given their substantial genetic and neurobiological underpinnings, have been proposed as potential endophenotypes (Courtet et al. 2011) that could be used in the early identification of war veterans with an increased risk of suicide. Thus, the goal of this study was to investigate the associations between temperament and character traits, as defined by the Cloninger's Psychobiological model of personality (Cloninger et al. 1993), and various aspects of suicidality among Croatian war veterans suffering from PTSD.

SUBJECTS AND METHODS

Participants in this study were 72 Caucasian male adults seeking outpatient psychiatric treatment at the National Center for Psychotrauma, University Hospital Center Zagreb, Croatia. All of them were war veterans of the Croatian Homeland War (1991-1995) who were suffering from PTSD. Data were collected between May and September 2014. Patients were approached by their psychiatrist or psychologist, and those who agreed to participate completed the battery of self-report measures, while waiting for their appointments, after the appointments had ended, or at home. No further participation was required. While 14 patients refused to participate, no differences in age and education level between these patients and those taking part in this study were observed.

The mean age of the sample was 52.33 years (SD=11.24 years). Regarding their educational status, 6 (8%) participants had completed elementary school, 54 (75%) had completed high-school and 12 (17%) held a college degree. In terms of employment, 36 participants (51.2%) were employed, 17 (22.9%) were unemployed, and 19 (17.7%) were retired. The average length of psychiatric treatment was 6.46 years (SD=2.78 years), while the average number of psychiatric hospitalizations was 1.67 (SD=1.36).

The diagnosis of PTSD was determined using the ICD-10 diagnostic criteria (WHO 1992) and involved a consensus between the attending psychiatrists and clinical psychologists. Because this study did not include the use of structured clinical interviews, comorbid psychiatric and personality disorder diagnoses were not determined. Patients affected by a neurological disorder, organic mental disorder, acute psychotic disorder, and those with low comprehension skills were not enrolled. Patients' written informed consent was obtained after the research protocol was thoroughly explained. This study was officially approved by the Ethical Committee of the institution in which the research was carried out.

The Temperament and Character Inventory-Revised (TCI-R) (Cloninger 1999) is a self-report questionnaire designed to measure 4 temperament (Novelty seeking (NS), Harm Avoidance (HA), Reward Dependence (RD), and Persistence (PS)) and 3 character dimensions (Self- Directedness (SD), Cooperativeness (CO), and Self-Transcendence (ST)) within the Psychobiological Model of Personality (Cloninger et al. 1993). The questionnaire is made up of 240 items rated on a 5-point Likert scale, ranging from 1 (definitely false) to 5 (definitely true). The Croatian version of the TCI-R has exhibited satisfactory psychometric properties in a large sample of psychiatric outpatients (Jaksic et al. 2014). In the present study, Cronbach's alpha coefficients for the seven subscales ranged from 0.70 to 0.87.

The Suicidal Behaviors Questionnaire-Revised (SBQ-R) (Osman et al. 2001) is a short self-report instrument made up of 4 items each assessing a different dimension of suicidality: lifetime suicidality ("Have you ever thought about or attempted to kill yourself?"), suicidal ideation over the past 12 months ("How often have you thought about killing yourself in the past year?"), threat of suicide attempt ("Have you ever told someone that you were going to commit suicide, or that you might do it?"), and risk of future suicidal behavior ("Have you ever told someone that you were going to commit suicide, or that you might do it?"). The four items can be summed into a total suicidal risk score that ranges from 3 to 18. In this study, Cronbach's alpha coefficient was 0.82.

Statistical Analysis

All statistical analyses were performed using the SPSS version 17 (SPSS, Chicago, IL). Descriptive analysis included percentages, means and standard deviations. Reliability of the self-report scales was assessed using Cronbach's alpha coefficient. Pearson correlations were computed to examine the zero-order relationship among the investigated variables. The t-test was used to examine the potential differences in personality dimensions between war veterans who exhibited low and high risk of suicide (based on the recommended cut-off score on the SBQ-R). We defined the level of statistical significance as P less than 0.05.

RESULTS

Mean scores and standard deviations for various aspects of suicidality were as follows: lifetime suicidality 2.27 (1.10), suicidal ideation over the past 12 months 1.97 (1.19), threat of suicide attempt 1.42 (0.67), risk of future suicidal behavior 1.39 (1.56), and total suicidal risk 7.05 (3.85). Based on the recommended cut-off score of 8 (Osman et al. 2001), 35% of our participants exhibited a high risk of suicidal behavior.

Means and standard deviations of temperament and character scales were: NS 94.74 (13.67); HA 112.58 (22.79); RD 93.86 (16.80); PS 106.38 (25.62) SD 131.80 (18.68); C 128.05 (20.03); ST 74.07 (13.64).

Of all the socio-demographic and clinical variables, age ($r=0.25$, $p<0.05$) and education level (-0.27, $p<0.05$) were significantly, albeit weakly, related to the total suicidal risk.

Table 1. Correlations between various aspects of suicidality (SBQ-R) and seven dimensions of temperament and character (TCI-R)

	NS	HA	RD	PS	SD	CO	ST
SBQ-R 1	0.08	0.16	-0.16	-0.08	-0.07	-0.19	-0.05
SBQ-R 2	-0.01	*0.33***	-0.20	-0.28*	*-0.38***	-0.25*	0.19
SBQ-R 3	0.04	0.09	-0.29*	-0.20	-0.24*	*-0.33***	0.08
SBQ-R 4	-0.01	*0.45***	-0.28*	*-0.40***	*-0.36***	-0.22	0.17
SBQ-R total	0.02	*0.35***	-0.27*	-0.30**	*-0.33***	-0.27*	0.13

Note. SBQ-R 1 = lifetime suicidality; SBQ-R 2 = suicidal ideation over the past 12 months; SBQ-R 3 = threat of suicide attempt; SBQ-R 4 = risk of future suicidal behavior; SBQ-R total = total suicidal risk. Correlation coefficients larger than 0.30 are highlighted in italic; *p<0.05. **p<0.01.

Table 2. Mean score comparison of the seven personality dimensions between war veterans with high (n=25) and low (n=47) suicide risk

	Mean (SD)		t-test	P
	Low risk	High risk		
Novelty Seeking	93.72 (12.744)	95.50 (14.851)	-0.494	>0.05
Harm Avoidance	107.74 (16.639)	119.71 (29.381)	-2.005	*<0.05*
Reward Dependence	95.62 (17.207)	90.45 (16.340)	1.102	>0.05
Persistence	108.42 (19.763)	99.10 (32.176)	1.625	>0.05
Self-Directedness	134.92 (15.917)	126.86 (22.475)	1.593	>0.05
Cooperativeness	130.87 (18.197)	123.35 (23.036)	1.372	>0.05
Self-Transcendence	72.15 (12.368)	76.65 (15.146)	-1.224	>0.05

Table 1 presents the zero-order correlations between various aspects of suicidality (as measured by the four SBQ-R items) and seven dimensions of temperament and character. These associations revealed that temperament dimension HA and character dimension SD exhibited moderate-size correlations with several aspects of suicidality, including the total suicidal risk. In addition, temperament dimensions PS had a moderate negative correlation with the risk of future suicide, while character dimension CO was negatively associated with the disclosed threat of suicide attempt.

The t-test was used to examine the potential differences in personality dimensions between war veterans who exhibited low and high risk of suicide (based on the recommended cut-off score on the SBQ-R) (Table 2). The analysis revealed temperament dimension HA to be significantly higher among those who had high suicide risk ($t=-2.01$, $p<0.05$), whereas other personality dimensions were similar in the two groups of participants.

DISCUSSION

The aim of this study was to investigate whether personality dimensions are associated with various aspects of suicidality among Croatian war veterans suffering from PTSD. Temperament dimension Harm Avoidance and character dimension Self-Directedness were found to be most consistently associated with several expressions of suicidal tendencies: frequency of suicidal ideation over the past 12 months, self-reported likelihood of suicidal behavior in the future, as well as the overall suicidal risk. In addition, war veterans who are temperamentally fearful, doubtful, shy and pessimistic (i.e., high HA) seem to be at an increased risk of possible suicide attempt, at least based on the empirically derived cut-off scores (Osman et al. 2001). A recent study conducted in a large clinical sample showed that HA, conceptualized as a serotonin-mediated temperament trait (Cloninger et al. 1993), was independently associated with the history of suicide attempts, further supporting a primary involvement of the serotonergic system in suicide behaviors (Perroud et al. 2013). Our findings also suggest that war veterans who tend to perceive themselves as unable to influence a difficult situation positively and to solve a given problem (i.e., low SD) are at an increased risk of suicide, in line with poor decision making capacity of suicide attempters reported by prior research (Jollant et al. 2005).

It is interesting to note that temperament dimension Persistence exhibited a moderate negative association with the self-reported likelihood of suicidal behavior in the future, suggesting that war veterans who are industrious, hard working and self-disciplined believe in alternative ways of coping with future life issues other than suicide. This is in accordance with a recent study (Soltaninejad et al. 2014) conducted on Iranian military personnel, showing that a similar personality trait derived from the Big-Five perspective - Conscientiousness - was associated with a reduced risk of suicide. With regard to Novelty Seeking, a temperament trait sometimes associated with suicidal behavior, we found no association with different aspects of suicidality. This was also the case in a recent study with a large and diagnostically heterogeneous psychiatric sample (Jaksic et al. 2014). It might be that only some facets (e.g., impulsiveness) of NS are related to suicide, or that NS has a relevant role in extremely violent suicide attempts (van Heeringen et al. 2000).

Additionally, age and education level were also related to the overal risk of suicide, indicating that war veterans who are older and less educated are more likely to engage in suicidal ideation, possibly suicidal behavior as well.

There are several limitations to the present study. First, the study sample was limited in size and consisted only of veterans who were being treated for PTSD as outpatients, thus limiting the ability to extend our findings to the entire population of Croatian war veterans. Second, we failed to control for the intensity of PTSD symptoms and the potential comorbid psychiatric diagnoses, raising the possibility that the pathoplastic effects of acute distress on personality might have resulted in the elevation of self-report scores. Finally, future studies are encouraged to examine other aspects of suicidality (i.e., number and type of suicide attempts), as well as to assess suicidal ideation and behavior via structured interviews.

CONCLUSIONS

Notwithstanding some limitations of this study, these findings could help extend our understanding of the elevated suicide risk in war veterans with PTSD. There is a need for detailed assessment of personality traits in order to facilitate prevention of various aspects of suicidality in this population. It seems that particular interest should be focused on war veterans with a dimensional personality profile characterized by high Harm Avoidance and low Self-Directedness.

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