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The factor structure of psychiatric comorbidity among Iraq/Afghanistan-era veterans and its relationship to violence, incarceration, suicide attempts, and suicidality

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ABSTRACT

The present research examined how incarceration, suicide attempts, suicidality, and difficulty controlling violence relate to the underlying factor structure of psychiatric comorbidity among a large sample of Iraq/Afghanistan-era veterans ($N=1897$). Diagnostic interviews established psychiatric diagnoses; self-report measures assessed history of incarceration, difficulty controlling violence, suicide attempts, and suicidality. A 3-factor measurement model characterized by latent factors for externalizing-substance-use disorders (SUD), distress, and fear provided excellent fit to the data. Alcohol-use disorder, drug-use disorder, and nicotine dependence were indicators on the externalizing-SUD factor. Posttraumatic stress disorder and depression were indicators on the distress factor. Panic disorder, social phobia, specific phobia, and obsessive-compulsive disorder were indicators on the fear factor. Incarceration was exclusively predicted by the externalizing-SUD factor. Difficulty controlling violence, suicidality, and suicide attempts were exclusively predicted by the distress factor. Contrary to hypotheses, the path from the externalizing/SUD factor to difficulty controlling violence was not significant. Taken together, these findings suggest that the distress factor of psychiatric comorbidity is a significant risk factor for suicidality, suicide attempts, and difficulty controlling violence and could help to explain the frequent co-occurrence of these critical outcomes among returning Iraq/Afghanistan veterans.

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1. Introduction

Iraq/Afghanistan-era veterans are at increased risk for a range of psychiatric conditions, including posttraumatic stress disorder (PTSD), depression, and alcohol misuse (Hoge et al., 2004; Calhoun et al., 2008; Elbogen et al., 2013). High rates of psychiatric comorbidity are also common among veterans (Orsillo et al., 1996; Thomas et al., 2010), which is consistent with factor analytic studies demonstrating that common psychiatric disorders load onto three higher-order factors: (1) an externalizing/substance-use disorder (SUD) factor characterized by alcohol and drug disorders, nicotine dependence, and antisocial personality disorder; (2) a distress factor characterized by depression and generalized anxiety disorder; and (3) a fear factor characterized by social phobia, simple phobia, and panic disorder (Krueger, 1999; Eaton et al., 2011).

Other studies have examined how PTSD relates to the higher-order factor structure of psychiatric comorbidity (Cox et al., 2002; Slade and Watson, 2006; Miller et al., 2008). In general, these studies have found support for a three-factor solution in which PTSD loads exclusively onto the distress factor. For example, among a large sample (1325) of male Vietnam veterans, Miller et al., 2008 found evidence for a three-factor model in which the distress factor was characterized by PTSD and major depression, the fear factor was characterized by panic disorder and Obsessive-compulsive disorder (OCD), and the externalizing factor was characterized by alcohol-use disorder, substance-use disorder, and antisocial personality disorder. The current study aimed to extend this important line of research by examining how the

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three-factor model of psychiatric comorbidity might relate to areas of high public health relevance among Iraq/Afghanistan-era veterans, including incarceration, violence, suicide attempts, and suicidality.

1.1. Incarceration, violence, suicide attempts, and suicidality among veterans

There is growing recognition that criminal behavior and incarceration are significant problems among returning Iraq/Afghanistan Veterans (Elbogen et al., 2012). While both SUDs and PTSD have been related to incarceration (Calhoun et al., 2005; Erickson et al., 2008; Elbogen et al., 2012), SUDs appear to be psychiatric conditions that present the greatest risk for incarceration among both non-Iraq/Afghanistan-era (Erickson et al., 2008) and Iraq/Afghanistan-era veterans (Elbogen et al., 2012). Thus, we expected that the externalizing-SUD factor would be the psychopathology factor most strongly associated with incarceration.

Violence is also a significant problem among returning veterans (Beckham et al., 2000; Elbogen et al., 2008; MacManus et al., 2012). A recent study found that both PTSD (odds ratio (OR)=4.8) and alcohol misuse (OR=3.1) had significant effects on physical violence among veterans following deployments to Iraq (MacManus et al., 2012). This finding is consistent with prior research associating violence with both PTSD and externalizing-SUD disorders among Vietnam veterans (Beckham et al., 2000; Taft et al., 2005; Elbogen et al., 2008). Thus, we hypothesized that both the externalizing-SUD and distress factors would have significant effects on difficulty controlling violence.

Finally, there is growing evidence that the rate of completed suicide among Iraq/Afghanistan-era veterans with psychiatric disorders is elevated (Kang and Bullman, 2008; Blow et al., 2012). Given prior research demonstrating that the distress factor is predictive of suicide attempts (Eaton et al., 2013) as well prior research indicating that veterans with both PTSD and alcohol-use disorders may not endorse greater suicidality than veterans with PTSD alone (Guerra et al., 2011; Jakupcak et al., 2009), we hypothesized that current suicidality and history of suicide attempts would be most strongly associated with the distress factor of psychiatric comorbidity.

1.2. Objectives and hypotheses

The objective of the current study was to examine how the hypothesized three factor model of psychiatric comorbidity might relate to outcomes of high public health relevance among returning Iraq/Afghanistan veterans, including incarceration, violence, suicide attempts, and suicidality. We hypothesized that: (1) A three-factor model of psychopathology characterized by an externalizing-SUD factor, a distress factor, and a fear factor would provide the best fit to the data; (2) Incarceration would be predicted by the externalizing-SUD factor; (3) Violence would be predicted by the externalizing-SUD and distress factors; and (4) Suicidality and suicide attempts would be predicted by the distress factor.

2. Methods

2.1. Participants

Participants included 1897 Iraq/Afghanistan-era veterans who participated in the ongoing Veterans Affairs (VA) Mid-Atlantic Mental Illness Research, Education and Clinical Center (MIRECC) Registry Database for the Study of Post-Deployment Mental Health. To be eligible for the study, participants had to have served in the United States military after September 11, 2001 and had to have been enrolled in the VA. Participants were primarily recruited through recruitment letters that invited them to participate in the study. Participants were also recruited through advertisements and clinician referrals. As can be seen in Table 1, the sample was predominantly male (79.5%) and African-American (52%). On average, participants

Table 1
Sample characteristics.

Continuous demographic variables	**Total sample (N=1897)**	**Sample 1 (*n*=925)**	**Sample 2 (*n*=972)**	**Test statistic comparing samples 1 and 2**
Age (Years)	37.3 (10.0)	37.3 (10.1)	37.5 (9.9)	t (1895)= −0.467, p=0.64
Years of education	13.4 (3.5)	13.4 (3.5)	13.4 (3.6)	t (1873)=0.032, p=0.98
Tours of duty	1.5 (1.3)	1.5 (1.2)	1.5 (1.4)	t (1859)= −0.801, p=0.42
Categorical demographic variables	**Total sample (*N*=1897)**	**Sample 1 (*n*=925)**	**Sample 1 (*n*=972)**	**Test statistic comparing samples 1 and 2**
Gender (% Male)	79.5%	80.8%	78.4%	χ^2 (1)=1.625, p=0.20
Ethnicity (% Latino)	7%	8.8%	5.3%	χ^2 (1)=5.638, p=0.02
Race				
White	46.0%	48.1%	43.9%	χ^2 (1)=2.169, p=0.14
African-American or Black	52.4%	50.0%	54.6%	χ^2 (1)=2.596, p=0.11
American -Indian or Alaska Native	1.8%	1.9%	1.8%	χ^2 (1)=0.011, p=0.92
Asian	1.3%	1.4%	1.1%	χ^2 (1)=0.121, p=0.73
Hawaiian Native or Pacific Islander	0.8%	1.0%	0.7%	χ^2 (1)=0.500, p=0.48
Categorical indicator variables used in the factor analysis models	**Total sample (*N*=1897)**	**Sample 1 (*n*=925)**	**Sample 1 (*n*=972)**	**Test statistic comparing samples 1 and 2**
LT alcohol use disorder	37.5%	38.2%	36.9%	χ^2 (1)=3.22, p=0.57
LT substance use disorder	13.0%	13.1%	12.9%	χ^2 (1)=0.018, p=0.89
LT nicotine dependence	20.2%	20.3%	20.1%	χ^2 (1)=0.013, p=0.91
LT major depression	38.8%	39.4%	38.2%	χ^2 (1)=0.296, p=0.59
LT PTSD	38.0%	39.3%	36.8%	χ^2 (1)=1.26, p=0.26
LT panic disorder	5.1%	5.0%	5.2%	χ^2 (1)=0.029, p=0.86
LT social phobia	4.4%	3.7%	5.0%	χ^2 (1)=1.83, p=0.18
LT specific phobia	3.7%	4.0%	3.6%	χ^2 (1)=0.206, p=0.65
LT OCD	2.1%	2.3%	1.9%	χ^2 (1)=0.424, p=0.52
LT suicide attempt	7.5%	7.3%	7.8%	χ^2 (1)=0.237, p=0.63
Current suicidality	8.5%	8.1%	8.9%	χ^2 (1)=0.325, p=0.57
LT incarceration	21.5%	22.2%	20.8%	χ^2 (1)=0.539, p=0.46
Difficulty controlling violence (past 30 days)	9.0%	9.9%	8.2%	χ^2 (1)=1.57, p=0.21

Note: PTSD=Posttraumatic stress disorder; OCD=Obsessive-compulsive disorder; LT=lifetime prevalence.