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Does the Repressor Coping Style Predict
Lower Posttraumatic Stress Symptoms?

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Abstract

We tested whether a continuous measure of repressor coping style predicted lower posttraumatic stress disorder (PTSD) symptoms in 122 healthcare professionals serving in Operation Iraqi Freedom. Zero-order correlational analyses indicated that predeployment repressor coping scores negatively predicted postdeployment PTSD symptoms, $r_s = -.29$, $p = .001$, whereas predeployment CD-RISC scores did not, $r_s = -.13$, $p = .14$. However, pre-deployment trait anxiety was chiefly responsible for the association between repressor coping and PTSD symptom severity, $r_s = .38$, $p = .001$. Four percent of the subjects qualified for a probable PTSD diagnosis. Although service members with relatively higher PTSD scores had lower repressor coping scores than did the other subjects, their level of pre-deployment anxiety was chiefly responsible for this relationship. Knowing someone's predeployment level of trait anxiety permits better prediction of PTSD symptoms among trauma-exposed service members than does knowing his or her level of repressive coping.

Does the Repressor Coping Style
Predict Lower Posttraumatic Distress?

Most people exposed to traumatic events do not develop posttraumatic stress disorder¹ (PTSD), revealing that victims vary in their vulnerability for developing the disorder. Accordingly, researchers have sought to identify variables that heighten risk for PTSD among those suffering trauma.² More recently, they have inverted the traditional emphasis on risk, seeking instead to identify resilience variables that buffer people against PTSD.³⁻⁵ Resilience programs may bolster stress-buffering traits, helping individuals acquire skills to recover from exposure to serious stressors.⁶

Variables that foster resilience are not necessarily the mirror image of risk factors. For example, lower scores on intelligence tests prospectively predict severity of PTSD symptoms among veterans even after researchers have adjusted statistically for the severity of combat exposure.⁷ Yet the mean IQ score of veterans without PTSD lies within the above average range, whereas it lies within the normal range for those with PTSD.⁷ Likewise, children with above average IQ scores are less likely to develop PTSD following subsequent trauma exposure compared to children whose scores were in the normal or low range.⁸ Yet risk for PTSD among traumatized

children of low intelligence is no greater than among those of average intelligence. These studies imply that above average intelligence is a resilience variable rather than below average intelligence being a risk factor.

Another variable potentially relevant to resilience is the repressor coping style.^{9,10} Repressors are people who report low levels of anxiety, but who score high on a measure of social desirability (i.e., defensiveness about acknowledging emotional distress).¹¹ Although repressors report little distress when encountering stressors, they sometimes exhibit physiological activation.¹² Results such as these might seem to suggest that repressors minimize their true level of anxiety. Yet research does not support this interpretation.^{13,14} Not only do repressors differ from highly anxious people, they also differ from low anxious people who do not exhibit high levels of defensiveness. For example, highly anxious people, including those with PTSD,¹⁵ exhibit delayed color naming of threatening words on the emotional Stroop test,¹⁶ suggestive of an attentional bias for threat that exacerbates their propensity to experience distress. However, not only do repressors exhibit less Stroop interference for idiographic threat words than highly anxious people do, they also exhibit less Stroop interference for

these words than nondefensive, low-anxiety people do.¹⁴ If repressors were actually anxious people who downplay their distress, they would exhibit at least as much Stroop interference for threat words as do highly anxious people.

In fact, repressors seem to have exceptional control over their attention in the presence of threat, a process that may foster resilience in the face of trauma. Consistent with this possibility, the repressor coping style is associated with less distress among people who lost loved ones to suicide.¹⁰ Ginzburg et al.⁹ found that repressors are less likely than other people to develop PTSD after suffering a heart attack. Bonanno et al.¹⁷ found that conjugally bereaved individuals who exhibited low self-reported distress and high physiological arousal had a mild grief course through 25 months post-loss. Taken together, these results suggest that repressive coping may buffer people against developing psychopathology following exposure to extremely stressful events.

In this study, we investigated possible predictors of resilience among health care professionals who had served in a combat support hospital in Iraq. Although professionals who treat seriously wounded and dying combatants encounter gruesome situations,¹⁸ the potential risk for PTSD in this

population is not as clear as it is in service members with greater risk for direct personal life threat.^{19,20}

Nevertheless, we assessed exposure to both military healthcare stressors and combat-related stressors.

We tested whether Mendolia's Index of Self-Regulation²¹ (ISE), a dimensional measure of the repressor coping style, prospectively predicts PTSD symptoms in deployed military healthcare professionals. We hypothesized that higher predeployment ISE scores would predict lower PTSD scores postdeployment. We also tested whether the Connor-Davidson Resilience Scale,²² a measure of attitudes for coping with adversity, prospectively predicts PTSD symptoms. Consistent with previous research on veterans of Operations Enduring and Iraqi Freedom⁵ (OEF/OIF), we hypothesized that higher predeployment scores on this measure would predict lower PTSD symptom severity postdeployment. Finally, we compared subjects with a probable postdeployment diagnosis of PTSD on the putative resilience measures.

Method

Administrative Approval

Prior to the initiation of our study, the institutional review board of Wilford Hall Medical Center at Lackland Air Force Base reviewed and approved the protocol and materials.

Subjects provided a unique identifier so that we could link their surveys over time without the subjects revealing their identity to us.

Subjects

The subjects were 122 U.S. Air Force medical personnel who served in support of OIF at a large combat support hospital in Iraq and who volunteered to participate in a prospective longitudinal study of risk and resilience.²³ To help maintain anonymity, we collected some demographic information on subjects (e.g., age, rank) in ranges rather than specific item responses.

Of subjects who completed the demographic portion of the questionnaire, most were married (67.2%, $n = 82$). Unfortunately, many subjects did not indicate their sex, apparently because of the inconspicuous location of this item on the questionnaire, rendering it easy to overlook. Our best estimate is that about 50% were male. The ethnic composition of the study sample was Caucasian (73.8%, $n = 90$), African-American (6.6%, $n = 8$), Latino (11.5%, $n = 14$), Asian-American (3.3%, $n = 4$), and Other (2.5%, $n = 3$).

Subjects ranged widely in age. The percentages were 18-24 years old (14.8%, $n = 18$), 25-29 years old (21.3%, $n = 26$), 30-34 years old (18%, $n = 22$), 35-39 years old (17.2%, n

= 21), 40-44 years old (15.6%, $n = 19$), and 45 years or older (12.3%, $n = 15$). A slight majority were officers (54.9%, $n = 67$), whereas the rest were enlisted personnel (43.5%, $n = 53$).

Testing Procedures

Subjects completed predeployment questionnaires during their processing through Lackland Air Force Base prior to departure for Iraq. They completed postdeployment questionnaires approximately 5 months later, 1 month after returning to the United States. The study sample comprised a series of cohorts that deployed to Iraq every 4 months beginning in September 2004 until January 2009. During this interval, cohorts departed for Iraq every 4 months.

One of the investigators explained the study to the medical personnel at the predeployment session, and asked them to complete a voluntary survey comprising the demographic questions and several questionnaires. The cover sheet provided instructions, informed subjects that their participation was voluntary, and emphasized the confidentiality of their responses. Subjects completed predeployment questionnaires in an auditorium. An investigator was present to provide instructions, answer questions, and ask if subjects would allow us to recontact

them to ask them to complete mid-deployment and postdeployment surveys. Completion of the predeployment surveys took about 45 minutes. Health care personnel inserted surveys, whether completed or not, into envelopes such that the investigators were unaware of who had participated in the study.

Questionnaires Completed at Predeployment

The predeployment survey packet contained a demographic questionnaire, the short form of the Manifest Anxiety Scale²⁴, the short form of the Marlowe-Crowne Social Desirability Scale²⁵, and the Connor-Davidson Resilience Scale.²²

Questionnaires Completed at Postdeployment

The postdeployment survey packet contained the PTSD Checklist-Military version (PCL-M)²⁶, the Combat Exposure Scale (CES), and the Military Healthcare Stressor Scale (MHSS).

Description of Measures

Manifest Anxiety Scale (MAS). The original Manifest Anxiety Scale²⁴ (MAS) consists of 50 true/false questions drawn from the Minnesota Multiphasic Personality Inventory that tap trait anxiety. A study²⁴ of 59 undergraduates indicated a three-week test-retest reliability of $r = .89$, and a study²⁷ of 64 neuropsychiatric patients yielded a

validity coefficient of $r = .60$ between MAS scores and clinician ratings of behavioral manifestations of anxiety. Psychometric scrutiny of individual questions led to the deletion of items of dubious validity,^{27,28} resulting in the 20-item short form of the MAS.²⁹ Despite its brevity, the short form has a coefficient of internal consistency indistinguishable from that of the original MAS (r_s : .76 versus .82, respectively). We used the short form of the MAS²⁹.

Marlowe-Crowne Social Desirability Scale (SDS). The SDS consists of 33 true/false items that measure defensiveness or the tendency to present oneself in an unrealistically favorable light.²⁵ Items include "I have never intensely disliked someone" (T) and "I like to gossip at times" (F).

Psychologists have developed a short-form of the SDS comprising 13 optimal items identified via factor analysis.³⁰ Its Kuder-Richardson reliability ($r = .76$) compares favorably with the original version, and the correlation between the original and short versions³⁰ is $r = .93$. The six-week test-retest reliability of the short version³¹ is $r = .74$. We used the short form of the SDS³⁰ in this study.

Index of Self-Regulation (ISE). Typically, researchers identify repressors categorically as people who score low on

the MAS, and high on the SDS.^{12,32} Yet as Mendolia argued,²¹ categorical conceptualizations of the repressor coping style have limitations relative to continuous measures of this style. Following Mendolia,²¹ we calculated an Index of Self-regulation (ISE) score for each subject by using the following formula: $20 - (\text{MAS} - \text{SDS})$. Higher ISE scores signify a stronger repressor coping style evinced by the tendency to report low anxiety symptoms and high social desirability scores. Mendolia used the short form of the MAS and the long form of the SDS, whereas we used the short forms of both scales. Hence, the highest score that one can get on the ISE would be 33 (i.e., $20 - [0 - 13]$), and the lowest score would be zero (i.e., $20 - [20 - 0]$).

Connor-Davidson Resilience Scale (CD-RISC). The CD-RISC contains 25 items tapping attitudes toward coping with adversity.²² Respondents indicate their degree of endorsement on five-point scales ranging from 0 ("not true at all") through 4 ("true nearly all the time") of items such as "Having to cope with stress makes me stronger." Connor and Davidson²² reported a Cronbach's alpha of .89 for 577 general population subjects, and a test-retest reliability of .87 among 24 patients with either PTSD or generalized anxiety disorder who had failed to respond favorably in a

psychopharmacology clinical trial. Evidence for convergent and divergent validity include a positive correlation with a hardiness scale ($r = .83$) and a negative correlation with a perceived stress scale ($r = -.76$).

PTSD Checklist-Military version (PCL-M). Our measure of PTSD symptoms was the widely-used PCL-M.²⁶ Keyed to PTSD symptoms for the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*,³³ items appear on five-point Likert scales ranging from 1 ("not at all") through 5 ("extremely"). The PCL-M has 17 items, and scores range from 17 to 85. The sensitivity and specificity of the PCL-M for detecting clinician-diagnosed PTSD ranges from .85 to .39 and from .73 to .97, respectively, depending on cutoffs and prevalence of the disorder in target population.³⁴

Combat Exposure Scale (CES). The CES is a rationally derived, 22-item questionnaire based on the Peacekeeping Incidents and Experiences Scale.³⁵ It measures the occurrence and psychological impact of combat-related stressors such as "being attacked or ambushed" and "patrolling areas (or riding in areas) where there were landmines." Respondents mark each item on a Likert scale ranging from one to six. One is for stressors that the respondent indicated "Does not apply." Two is for "Did Not Experience." For experienced stressors,

respondents indicate how much the event affected them ranging from three ("no impact at all") to six ("extreme impact

Military Healthcare Stressor Scale (MHSS). The MHSS is a 21-item questionnaire that measures the occurrence and impact of stressors associated with providing health care in a war zone. We developed the MHSS after consulting focus groups comprising military medical personnel who had served in Iraq and who had served on the Air Force Critical Care Aeromedical Transport Team. Items include a wide variety of medical stressors such as "exposure to a patient who cried or screamed in agony and fear," "exposure to patients with severe burns," and "exposure to patients that I didn't have a clue how to help." Respondents mark each item on a Likert scale ranging from one to five. One is for stressors that the respondent did not experience. For experienced stressors, respondents indicate how much the event affected them ranging from two ("no impact") to five ("extreme impact").

Results

Consistent with our hypothesis, higher predeployment ISE scores predicted lower postdeployment PCL-M scores, $r_s = -.29$, $p = .001$; however, predeployment CD-RISC scores did not, $r_s = -.13$, $p = .14$. However, because pre-deployment social

desirability scores were unrelated to PTSD symptoms ($r_s = -.02$, $p = .84$), and pre-deployment reports of trait anxiety were moderately correlated ($r_s = .38$, $p = .001$), it appears that the relationship between repressive coping and PTSD symptoms chiefly pertains to the relationship between trait anxiety and PTSD. In fact, the magnitude of positive correlation between pre-deployment trait anxiety and post-deployment PTSD symptoms was numerically greater than the magnitude of the negative correlation between predeployment repressor coping and PTSD symptoms. Hence, the association between repressor coping scores and PTSD symptoms appears attributable to predeployment trait anxiety.

Because the meaning of resilience presupposes exposure to a stressor, we identified subjects who reported at least one stressful event (scored at a level 4, 5, or 6; i.e., at least "A little" impact) by the Mid-Deployment or Post-Deployment CES. Unfortunately, not all subjects elected to complete the CES and the MHSS. Among the 90 subjects reporting at least one stressful event and for whom we did not have missing data, we conducted an ordinary least squares multiple regression analysis with PCL-M scores as the dependent variable and predeployment MAS scores, predeployment CD-RISC scores, predeployment social

desirability scores, CES scores, and MHSS scores as the independent variables. Because the PCL-M scores were not normally distributed, we used a bootstrap method to estimate standard errors. The R for regression (.68) was significantly different from zero, $F(5, 84) = 10.95$, $p < .001$, and the R^2 was .40 (adjusted $R^2 = .36$). However, in this model, only the CES, $\beta = .26$, $p = .007$, the MAS, $\beta = .33$, $p < .001$, and the MHSS, $\beta = .30$, $p < .001$, significantly predicted variance in PCL-M scores.

We next identified those subjects whose postdeployment PCL-M scores suggested probable PTSD and compared their responses on the predictor measures with subjects whose postdeployment PCL-M scores did not qualify for probable PTSD. Using conventional criteria for caseness, we classified a subject as qualifying for probable PTSD if he or she scored at least 50 on the PCL-M and endorsed sufficient B, C, and D criteria symptoms. Five subjects (4%) met these criteria, whereas 117 did not. To compare these two groups, we used a robust test for medians (Harrell-Davis) and estimated the 95% confidence intervals with a bootstrap method. Unsurprisingly, the median PCL-M score for these five subjects was substantially higher than for the remaining subjects, $Md = 65.2$ (95% CI = 54.5 to 75.9) versus $Md = 22.1$

(95% CI = 20.6 to 23.7), $p < .00001$. Relative to the other subjects, those with probable PTSD also scored significantly higher on the measures of combat exposure, $Md = 71.4$ (95% CI = 60.1 to 82.7) versus $Md = 54.8$ (95% CI = 51.8 to 57.8), $p < .00001$, and health care stress, $Md = 82.7$ (95% CI = 79.1 to 86.2) versus $Md = 61.5$ (95% CI = 57.1 to 66.0), $p < .00001$. On Mendolia's ISE measure of repressive coping, the probable PTSD subjects scored only slightly and nonsignificantly lower than the other subjects did, $Md = 21.1$ (95% CI = 16.2 to 26.0) versus $M = 24.1$ (95% CI = 22.7 to 25.6), $p = .27$. As for the components of this index -- the measures of anxiety and social desirability -- the probable PTSD subjects, relative to the other subjects, scored higher on the former, but did not differ significantly on the latter: $Md = 6.4$ (95% CI = 4.9 to 7.9) versus $Md = 3.2$ (95% CI = 2.4 to 4.1), $p < .00001$ for trait anxiety; $Md = 7.8$ (95% CI = 3.9 to 11.7) versus $Md = 8.5$ (95% CI = 7.8 to 9.1), $p = .74$ for social desirability. Finally, the probable PTSD subjects scored indistinguishably from the other subjects on the CD-RISC: $Md = 79.2$ (95% CI = 74.8 to 83.5) versus $Md = 80.0$ (95% CI = 76.7 to 83.4), $p = .67$.

Discussion

In this prospective longitudinal study, we investigated candidate predictors of resilience for health care personnel serving in support of OIF. Specifically, we tested whether higher scores on Mendolia's index of repressive coping and Connor and Davidson's measure of resilience predict lower scores on a continuous measure of PTSD symptoms. Although Mendolia's measure was significantly and negatively associated with PTSD symptoms, lower self-reported trait anxiety drove this effect. Indeed, the positive correlation between predeployment trait anxiety and postdeployment PTSD symptoms was numerically greater than the negative correlation between predeployment repressive coping and postdeployment PTSD symptoms. Hence, our data suggest that knowing a person's predeployment level of trait anxiety will enable greater prediction of subsequent PTSD than knowing a person's predeployment level of repressive coping. These relationships persisted even after we adjusted the analysis for exposure to combat and health care stressors. Our findings are consistent with results of a study of Australian civilians whose pretrauma levels of neuroticism and symptoms of anxiety and depression significantly predicted PTSD symptoms in response to subsequent exposure to severe bushfires.³⁶

Using conventional criteria, we also identified subjects whose PCL scores indicated probable PTSD. Four percent of the subjects ($n = 5$) had scores suggestive of PTSD. Subjects with probable PTSD did not differ significantly from the remaining subjects on Mendolia's index of repressive coping or its social desirability component, but they did report predeployment trait anxiety levels that were approximately twice as high as those of the subjects without probable PTSD.

Connor and Davidson's CD-RISC was unrelated to PTSD symptom severity or caseness. Indeed, the medians of the probable PTSD group and the non-PTSD group were similar (79.2 versus 80.8, respectively), and nearly identical to the mean for the general population in Connor and Davidson's original study (80.4). Hence, the CD-RISC was unhelpful in predicting resilience. Interestingly, our findings contrast with those of Pietrzak et al.⁵ who found that CD-RISC scores were negatively associated with both continuous and categorical measures of PTSD in OEF/OIF veterans approximately 26.9 months postdeployment. Their subjects came primarily from Army National Guard units whose direct combat exposure was likely much higher than was the combat exposure of our health care professionals. As Pietrzak et al.⁵ emphasized, their design was cross-sectional, not prospective. Unlike us, they

did not administer the CD-RISC prior to deployment. Moreover, even their non-PTSD subjects had resilience scores that were significantly lower than that of Connor and Davidson's healthy civilian sample.

It is critical for the military to identify modifiable predictors of resilience suitable for incorporation in training and intervention programs for reducing risk for PTSD. Yet a conceptual issue arises in resilience prediction when nonpathological outcomes are the norm, not the exception. That is, epidemiologists tend to focus on predicting disease, not health, and predicting resilience when most people do not fall ill is akin to predicting health. Indeed, 95% of our study group did not have PTSD, despite the hazards they encountered while providing health care in a war zone. Other research groups have reported similar rates of PTSD among health care professionals serving in Iraq¹⁸ (9%) and in Israel¹⁹ (4.3%). To be sure, our subjects had less exposure to mortal danger than do service members in the combat arms, and this likely reduces the incidence of PTSD. Finally, performing their professional tasks of reducing suffering and saving lives in the war zone may itself buffer health care professionals from developing PTSD.

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