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## Criminal Justice Involvement, Trauma, and Negative Affect in Iraq and Afghanistan War Era Veterans

Eric B. Elbogen, Ph.D.<sup>1,2</sup>, Sally C. Johnson, M.D.<sup>1</sup>, Virginia M. Newton, Ph.D.<sup>1,2</sup>, Kristy Straits-Troster, Ph.D.<sup>2,3</sup>, Jennifer J. Vasterling, Ph.D.<sup>4,5</sup>, H. Ryan Wagner, Ph.D.<sup>2,3</sup>, and Jean C. Beckham, Ph.D.<sup>2,3</sup>

<sup>1</sup>Department of Psychiatry, University of North Carolina, Chapel Hill, NC

<sup>2</sup>Veterans Affairs Mid-Atlantic Mental Illness Research, Education, and Clinical Center (MIRECC), Durham, NC

<sup>3</sup>Department of Psychiatry & Behavioral Sciences, Duke University, Durham, NC

<sup>4</sup>Psychology Service and VA National Center for PTSD, VA Boston Healthcare System, Boston, MA

<sup>5</sup>Department of Psychiatry, Boston University School of Medicine, Boston, MA

### Abstract

Although criminal behavior in veterans has been cited as a growing problem, little is known about why some veterans are at increased risk for arrest. Theories of criminal behavior postulate that people who have been exposed to stressful environments or traumatic events and who report negative affect such as anger and irritability are at increased risk of antisocial conduct. We thus hypothesized that veterans with posttraumatic stress disorder (PTSD) or traumatic brain injury (TBI) who report anger/irritability would show higher rates of criminal arrests. To test this, we examined data in a national survey of  $N=1388$  Iraq and Afghanistan War Era Veterans. We found that 9% of respondents reported arrests since returning home from military service. Most arrests were associated with nonviolent criminal behavior resulting in incarceration for less than two weeks. Unadjusted bivariate analyses revealed that veterans with probable PTSD or TBI who reported anger/irritability were most likely to be arrested. In multivariate analyses, arrests were found to be significantly related to younger age, male gender, having witnessed family violence, prior history of arrest, alcohol/drug misuse, and PTSD with high anger/irritability but were not significantly related to combat exposure or TBI. Findings show that a subset of veterans with PTSD and negative affect may be at increased risk of criminal arrest. Since arrests are more strongly linked to substance abuse and criminal history, clinicians should also consider non-PTSD factors when evaluating and treating veterans with criminal justice involvement.

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The Institute of Medicine (2010) reported that criminal justice involvement is one of the most significant problems for Iraq and Afghanistan War Veterans. Many veterans have returned home diagnosed with posttraumatic stress disorder (PTSD) and traumatic brain injury (TBI) (Tanielian & Jaycox, 2008), both of which have been linked to incarceration, antisocial behavior, and violence among veterans from previous conflicts (Calhoun, Malesky Jr., Bosworth, & Beckham, 2005; Grafman, Schwab, Warden, & Pridgen, 1996; Greenberg & Rosenheck, 2009; Pandiani, Rosenheck, & Banks, 2003; Saxon et al., 2001;

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Eric Elbogen, Ph.D., University of North Carolina-Chapel Hill School of Medicine, Forensic Psychiatry Program and Clinic, Department of Psychiatry, CB #7167, Chapel Hill, NC 27599. eric.elbogen@unc.edu.

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Shaw, Churchill, Noyes Jr., & Loeffelholz, 1987). Recent estimates suggest that over 200,000 veterans are in U.S. jails and prisons, and more than half have been incarcerated for violent offenses (United States Bureau of Justice Statistics, 2007). This accounts for about 10% of the inmate population, and may be an underestimate because veteran status is not always collected.

It is likely that clinicians who treat veterans in either VA and non-VA settings will encounter veterans with criminal backgrounds (Calhoun, et al., 2005). However, little is known about the criminal behavior of service members returning from Iraq and Afghanistan (Institute of Medicine, 2010), particularly when they have been diagnosed with PTSD or TBI.

Agnew's general strain theory of criminal behavior posits that people are at increased risk of antisocial conduct if they previously have been exposed to trauma and subjectively report "negative affect," specifically anger and irritability (Agnew & White, 1992; Maschi, Bradley, & Morgen, 2008). Empirical research has supported this theory by demonstrating that, in the wake of stressful environments or traumatic events, negative affect predicts juvenile delinquency (Maschi, et al., 2008), peer deviance (Mason, Hitch, & Spoth, 2009), alcohol-related crimes (Day, Howells, Heseltine, & Casey, 2003), aggression (Burt, Mikolajewski, & Larson, 2009; Robertson, Daffern, & Bucks, 2012), psychopathic violence (Kroner, Forth, & Mills, 2005), and sex offending (McCoy & Fremouw, 2010). Negative affect is common in PTSD and TBI, and many with these conditions report symptoms of anger and irritability. Thus, this paper analyzes data from a national sample of Iraq and Afghanistan War Veterans to test the hypothesis that anger/irritability associated with PTSD and TBI is related to criminal justice involvement.

## Method

### Participants

The National Post-Deployment Adjustment Survey (NPDAS) sample was drawn by the U.S. Department of Veterans Affairs Environmental Epidemiological Service (EES) in May 2009 from a random selection of roster developed by Defense Manpower Data Center of over one million veterans who served in the U.S. military on or after September 11, 2001, and were separated from active duty in the Armed Forces or served as a member of the National Guard or Reserves. In order to ensure adequate representation of both genders, the sample was stratified and women veterans were oversampled. The sample was stratified by gender, and women were oversampled to ensure adequate representation.  $N=1388$  completed the survey, yielding a 56% corrected-response rate. This rate is comparable to, or greater than, that achieved in other national surveys of veterans (Beckham et al., 2008; Tanielian & Jaycox, 2008; Vogt et al., 2011).

No gender or geographic differences between responders and non-responders emerged. Mean age difference between respondents was statistically significant but of low magnitude (36 vs. 34 years). Respondent characteristics corresponded to known military data, (52% Army, 18% Air Force, 16% Navy, 13% Marines, and 1% Coast Guard; 30% non-white; 48% National Guard/Reserves) and the final sample included veterans from 50 states, Washington D.C., and 4 territories in approximately the same proportion as the actual military and matched the most populated states of military service members. Table 1 shows participant characteristics.

### Procedures

Following Institutional Board Review approval, the Dillman Method (Dillman, Smyth, & Christian, 2009) was employed to conduct the 35-minute confidential survey. This method

involves multiple contacts to maximize response rate, varied contacts to increase effectiveness with initial non-respondents, and mailings designed to connect personally with recipients.

Procedures were identical for both the online and print surveys; 80% of respondents took the survey online while 20% completed it on the print version. An initial study of 500 surveys (15% of the total sample) was piloted to identify unanticipated technical problems. Study respondents during the pilot phase were reimbursed \$40 for completing the survey; whereas those completing the survey during the remainder of the study period received \$50. All other procedures were identical for both phases of the survey. To examine for any differences in respondent characteristics secondary to survey medium or reimbursement rate, subgroups were compared on demographic, military, and clinical variables. No significant differences according to survey medium or pilot wave/reimbursement rate were detected.

Comparison of demographic, military, and clinical variables of those who completed the survey in response to the first invitation (wave 1 survey responders) with those who completed the survey after more than one request later mailings (waves 2, 3, 4) was made. The rationale for this was that completers in waves 2, 3, and 4 would have been ‘non-responders’ as compared to ‘responders’ of wave 1 (Dillman, et al., 2009). No differences were detected.

## Measures

Criminal justice involvement was determined by asking participants, “Have you been in jail or prison since deployment?” Positive response prompted specification of incarceration length and clarification as to whether the arrest was for a violent or nonviolent crime.

Variables known to be linked to criminal behavior and recidivism were identified through literature review and included age, gender, witnessing family violence, and previous criminal arrests. Combat exposure was measured with a modified scale from the Deployment Risk and Resilience Inventory (King, King, & Vogt, 2003). Substance misuse was scored positive if the veteran had a score of over 2 on the Drug Abuse Screening Test (DAST) (Skinner, 1982) or had a score over 7 on the Alcohol Use Disorder Identification Test (AUDIT)(Bradley & Bush, 1998). Other demographic, historical, and military data gathered and reported in Table 1.

PTSD was measured by the Davidson Trauma Scale (DTS) (Davidson et al., 1997) using a cutoff of 48, which showed .82 sensitivity and .94 specificity with the Structured Clinical Interview of Diagnosis (SCID) in Iraq and Afghanistan War Veterans (McDonald, Beckham, Morey, & Calhoun, 2009). The item “Have you been irritable or had outbursts of anger?” was dichotomized by low (not at all, once only, or 2 to 3 times) versus high (4 to 6 times, or every day) frequency of anger/irritability in the past week.

Assessment of TBI followed expert consensus guidelines (Ruff, Iverson, Barth, Bush, & Broshek, 2009) and was scored positive if the participant reported a past head injury and endorsed one of the following: loss of consciousness, posttrauma amnesia, being dazed or “seeing stars” immediately after injury or upon regaining consciousness, skull fracture, or brain surgery. Participants were also asked “Did any of the following problems [including irritability] begin or get worse afterward?”

## Analysis

SAS 9.2 was used for all statistical analyses. Women constituted 33% of the current sample but represent an estimated 15.6% of the military, based on September 2009 Defense Manpower Data Center (DMDC, 2010) figures; thus data in the current study were weighted

to reflect the latter proportion, yielding a weight-adjusted sample of  $n=1102$ . Chi-square analyses were used to evaluate bivariate associations with criminal behavior. Logistic regression was used to ascertain predictors of criminal arrests in multivariate models.

## Results

Sample characteristics are listed in Table 1. Because women constituted 33% of the current sample but represent an estimated 15.6% of the military based on September 2009 figures (Defense Manpower Data Center, 2010), data in the current study were weighted to reflect the latter proportion, yielding a weight-adjusted sample of  $N = 1,102$ . Bivariate associations were conducted using chi-square analyses. Relationships between criminal arrest and anger/irritability in PTSD and TBI are presented in Table 2 and Figure 1. Both support the hypothesis that veterans with TBI or PTSD reporting concurrent anger/irritability were more likely to be arrested. Bivariate associations with arrest are presented in Table 3. Younger age, male gender, substance misuse, witnessing parents fighting, history of arrests, and higher combat exposure were significantly associated with criminal arrests.

Outcomes of the multivariate analysis using logistic regression are presented in Table 4. The model was statistically significant ( $\chi^2=146.77$ ,  $df=10$ ,  $p<.0001$ ) and accounted for one-quarter of the variance in criminal justice involvement ( $R^2=.26$ ). Factors associated with arrests in the final model included: younger age, male gender, history of arrests, witnessing family violence, substance misuse, and PTSD with high anger/irritability; TBI with increased irritability approached, but did not achieve, statistical significance in this multivariate model. Combat exposure, while significantly associated with arrest in a bivariate analysis, failed to achieve significance when concurrently tested using a multivariate protocol; post hoc analyses indicate the link between combat exposure and arrest was mediated by PTSD with high irritability.

## Discussion

The data indicate that the subset of veterans with PTSD with high irritability may be at increased risk of criminal arrest after they return home from deployment, which is consistent with the general strain theory of criminal behavior (Agnew & White, 1992) and literature on veterans of other wars showing that PTSD hyperarousal symptoms such as anger and irritability elevate risk of violence (Savarese, Suvak, King, & King, 2001; Taft et al., 2007). Clinicians should be aware that veterans with PTSD who report very frequent symptoms of anger and irritability may be at increased risk of engaging in criminal behavior.

The current findings suggest that interventions targeting symptoms of anger and irritability have the potential to reduce arrest recidivism in veterans with both PTSD and criminal histories; if clinicians can help veterans with PTSD reduce episodes of anger and irritability. Similarly, VA Justice Outreach programs and Veteran Treatment Courts, which are both aimed at redirecting veterans from jails to mental health services (National Association of Drug Court Professionals, 2011; Russell, 2009), could routinely recommend interventions targeting symptoms of anger and irritability.

At the same time, PTSD with negative affect was less strongly related to criminal justice involvement than were other variables frequently found in civilian populations. Thus, veterans who are young and male, come from troubled family backgrounds (which may be a proxy for child maltreatment), abuse substances, or have criminal backgrounds are, like their civilian counterparts, at higher risk of breaking the law. Civilian research that has shown robust associations between these types of variables and juvenile delinquency (Schubert, Mulvey, & Glasheen, 2011), adult criminal behavior (Skeem, Manchak, & Peterson, 2011),

and violence (Elbogen & Johnson, 2009). Thus, clinicians should consider that non-military factors may contribute to criminal behavior by veterans. Veterans with criminal arrest histories should also be monitored closely for alcohol and drug misuse, since these factors are frequently linked to reoffending.

Limitations should be considered. Although reliance on self-report can result in under-reporting of symptoms or behavior, self-report of arrest has consistently shown high correlations with other measures of criminal justice involvement (Farrington, 1973; Nieves, Draine, & Solomon, 2000). Given cross-sectional data, causal interpretation of results is limited. Diagnoses and military experiences of nonresponders are unknown. Analyses of immediate versus delayed responders however did not show notable bias in the final sample.

The current study is a first step toward uncovering characteristics associated with criminal justice involvement among Iraq and Afghanistan War Veterans. The findings underscore the need for clinicians to recognize that many veterans seeking treatment, particularly those with PTSD, anger, and irritability, are at higher risk of arrest for criminal arrest. Anger has been shown to reduce treatment adherence and increase the rate of PTSD treatment dropout in veteran populations (Forbes et al., 2008) and the current data suggest that patients with PTSD who are difficult to engage may also be those who are at increased risk of criminal justice contact. Clinicians should also remain aware that the same factors related to arrest in civilian populations (e.g., substance abuse) are also relevant for veterans. Continued investigation of different pathways to criminal arrest may be helpful in developing better assessment and treatment strategies for veterans at increased risk of criminal justice involvement.

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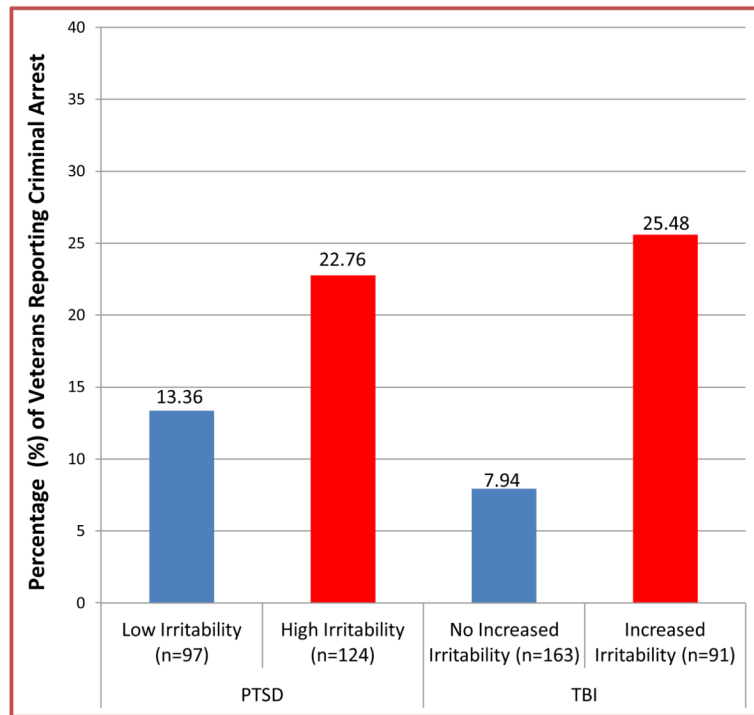
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**Figure 1.**  
 Post-Deployment Arrest Rate as a Function of PTSD/TBI and Anger/Irritability



**Table 1**

## Description of National Post-Deployment Adjustment Survey Sample

|   | <b>Weighted % (n) or median</b> |
|---|---------------------------------|
| <i>Demographic Domain</i>                   |                                 |
| Age   | 33 years                        |
| Annual Income                               | \$50,000                        |
| Education beyond high school                | 81.1% ( 894)                    |
| Race non-white                              | 29.7% (327)                     |
| Female                                      | 15.61% (172)                    |
| Married                                     | 61.08% (672)                    |
| Employed                                    | 78.24% (862)                    |
| <i>Historical Domain</i>                    |                                 |
| Parental Criminal History                   | 10.9% (120)                     |
| Witnessed Parents Fighting                  | 7.1% (79)                       |
| History of Previous Arrests                 | 6.0% (66)                       |
| <i>Military Domain</i>                      |                                 |
| Reserves or National Guard                  | 47.7% (525)                     |
| Multiple Deployments                        | 27.2% (300)                     |
| Over One Year Deployed                      | 26.5% (292)                     |
| <i>Clinical Domain</i>                      |                                 |
| Probable TBI without Increased Irritability | 14.8% (163)                     |
| Probable TBI with Increased Irritability    | 8.2% (91)                       |
| Probable PTSD with Low Irritability         | 8.0% (97)                       |
| Probable PTSD with High Irritability        | 11.3% (124)                     |
| <i>Criminal Justice Involvement</i>         |                                 |
| Post-Deployment Arrest                      | 9.0% (100)                      |
| Incarcerated More than Two Weeks            | 1.3% (14)                       |
| Violent Crime                               | 2.1% (23)                       |

**Table 2**  
 Bivariate associations between irritability and post-deployment criminal arrest in veterans with probable TBI and PTSD

| Independent Variables                       | Weighted <i>n</i> | Arrested <i>n</i> | %     | $\chi^2$ | <i>p</i> -value |
|---|-------------------|-------------------|-------|----------|-----------------|
| Probable TBI without Increased Irritability |                   |                   |       |          |                 |
| Yes   | 163               | 13                | 7.97  | 0.27     | .6046           |
| No  | 939               | 87                | 9.23  |          |                 |
| Probable TBI with Increased Irritability    |                   |                   |       |          |                 |
| Yes   | 91                | 23                | 25.48 | 32.50    | <.0001          |
| No  | 1011              | 77                | 7.57  |          |                 |
| Probable PTSD with Low Irritability         |                   |                   |       |          |                 |
| Yes   | 97                | 13                | 13.36 | 2.42     | .1194           |
| No  | 1005              | 87                | 8.62  |          |                 |
| Probable PTSD with High Irritability        |                   |                   |       |          |                 |
| Yes   | 124               | 28                | 22.76 | 32.01    | <.0001          |
| No  | 978               | 71                | 7.30  |          |                 |

**Table 3**

Bivariate associations between covariates and post-deployment criminal arrest

| Independent Variables              | Weighted <i>n</i> | Arrested <i>n</i> | %     | $\chi^2$ | <i>p</i> -value |
|------------------------------------|-------------------|-------------------|-------|----------|-----------------|
| <i>Demographic Domain</i>          |                   |                   |       |          |                 |
| <i>Age</i>                         |                   |                   |       |          |                 |
| Below median (less than 33)        | 615               | 87                | 14.19 | 44.89    | <.0001          |
| Median or above (33 or Older)      | 487               | 12                | 2.54  |          |                 |
| <i>Gender</i>                      |                   |                   |       |          |                 |
| Male                               | 930               | 94                | 10.11 | 8.24     | .0041           |
| Female                             | 172               | 6                 | 3.28  |          |                 |
| <i>High Combat Exposure</i>        |                   |                   |       |          |                 |
| Yes                                | 597               | 73                | 12.22 | 16.06    | <.0001          |
| No                                 | 505               | 27                | 5.28  |          |                 |
| <i>Witnessed Parents Fighting</i>  |                   |                   |       |          |                 |
| Yes                                | 79                | 20                | 25.00 | 26.17    | <.0001          |
| No                                 | 1023              | 80                | 7.82  |          |                 |
| <i>Substance Misuse</i>            |                   |                   |       |          |                 |
| Yes                                | 346               | 69                | 19.85 | 71.80    | <.0001          |
| No                                 | 756               | 31                | 4.09  |          |                 |
| <i>History of Previous Arrests</i> |                   |                   |       |          |                 |
| Yes                                | 66                | 18                | 27.79 | 30.06    | <.0001          |
| No                                 | 1036              | 81                | 7.84  |          |                 |

**Table 4**

Multivariate analysis of factors associated with post-deployment criminal arrest

| Independent Variables                       | Final Multivariate Model |           |        |
|---|--------------------------|-----------|--------|
|   | OR                       | 95% CI    | P      |
| Male  | 3.45                     | 1.33–8.94 | 0.0110 |
| Age   | 0.93                     | 0.90–0.96 | <.0001 |
| Witnessed Parents Fighting                  | 3.98                     | 2.07–7.67 | <.0001 |
| History of Previous Arrests                 | 2.38                     | 1.23–4.67 | 0.0102 |
| High Combat Exposure                        | 1.21                     | 0.71–2.06 | 0.4906 |
| Substance Misuse                            | 3.44                     | 2.11–5.60 | <.0001 |
| Probable TBI without Increased Irritability | 0.71                     | 0.36–1.42 | 0.3337 |
| Probable TBI with Increased Irritability    | 1.75                     | 0.89–3.42 | 0.1040 |
| Probable PTSD with Low Irritability         | 1.31                     | 0.62–2.74 | 0.4816 |
| Probable PTSD with High Irritability        | 2.12                     | 1.14–3.94 | 0.0178 |

$R^2=.26$ , AUC=.86,  $\chi^2=146.77$ ,  $df=10$ ,  $p<.0001$