

## ADHD and nonsuicidal self-injury in male veterans with and without PTSD

By: Nathan A. Kimbrel, Laura C. Wilson, John T. Mitchell, Eric C. Meyer, Bryann B. DeBeer, [Paul J. Silvia](#), Kim L. Gratz, Patrick S. Calhoun, Jean C. Beckham, and Sandra B. Morissette

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### **Abstract:**

The objective of the present research was to examine the association between ADHD symptoms and nonsuicidal self-injury (NSSI) in male Iraq/Afghanistan-era veterans with and without PTSD. Approximately 25% of veterans screened positive for clinically-significant levels of ADHD. Male veterans with PTSD were significantly more likely to report ADHD symptoms than male veterans without PTSD. In addition, as expected, ADHD was strongly associated with NSSI, even after accounting for the effects of demographic variables, PTSD, depression, and alcohol use disorder. Future work aimed at replicating and extending these findings in longitudinal studies of veterans is needed.

**Keywords:** Nonsuicidal self-injury | Attention-deficit/hyperactivity disorder | NSSI | Posttraumatic stress disorder

### **Article:**

#### **1. Introduction**

Nonsuicidal self-injury (NSSI) is the act of intentionally destroying one's own body tissue without suicidal intent for reasons that are not socially sanctioned (Klonsky et al., 2014). Recent studies demonstrate that NSSI is common among male veterans (e.g., Kimbrel et al., 2015a; Kimbrel et al., 2014, Kimbrel et al., 2016), particularly male veterans with posttraumatic stress disorder (PTSD; Kimbrel et al., 2014). These studies also consistently find that NSSI is associated with increased risk for suicidal behavior among veterans (Kimbrel et al., 2015a; Kimbrel et al., 2014, Kimbrel et al., 2016). For example, Kimbrel et al. (2016) found that NSSI remained a robust predictor of suicide attempts among Iraq/Afghanistan-era veterans ( $AOR=28.494, p<0.001$ ), even after accounting for the influence of PTSD, depression, and alcohol dependence. Taken together, these and other similar studies demonstrate the importance of studying the correlates of NSSI among male veterans.

To date, there has been only limited research aimed at identifying predictors of NSSI within this unique population. Moreover, no study has examined the association between ADHD and NSSI in male veterans, despite the fact that: (1) ADHD is common among males (Arnett et al., 2015); (2) ADHD is common among veterans with PTSD (Harrington et al., 2012); (3) male veterans with PTSD are at increased risk for NSSI (Kimbrel et al., 2014); and (4) ADHD has been prospectively associated with NSSI in civilians (Hinshaw et al., 2012). The objective of the present research was to address this gap in the literature by examining the association between ADHD and NSSI among veterans with and without PTSD. We hypothesized that ADHD symptoms would be associated with increased risk for NSSI among male veterans, even after accounting for the effects of demographic variables, PTSD, depression, and alcohol use disorder (AUD).

## 2. Method

### 2.1. Participants and procedures

The analyses presented in the current paper represent secondary analyses of a study originally designed to study the genetics of PTSD (Kimbrel et al., 2015b). PTSD was oversampled in this study, such that approximately half of the participants met lifetime criteria for PTSD. Analyses in the current paper were limited to male Iraq/Afghanistan-era veterans who had NSSI data available for analysis, resulting in a final sample size of  $N=140$ . Analyses were limited to males in the present research because: (1) females only comprised 7% of the original sample; (2) there are well-established sex differences in ADHD that may be due to differences in genetic liability (Arnett et al., 2015); and (3) the causes and consequences of NSSI have been greatly understudied in adult men to date, resulting in a dearth of knowledge on this important topic (Kimbrel et al., in press). On average, participants were 40.2 ( $SD=10.0$ ) years of age. The majority of participants were White (68%) and non-Hispanic (85%). After providing informed consent, participants completed a battery of clinical interviews and self-report measures.

### 2.2. Measures

Clinically-significant ADHD symptoms were defined as a score of 4 or higher on the 6-item version of the World Health Organization Adult ADHD Self-Report Scale (ASRS; Kessler et al., 2005). Scores of 4 or higher on this measure have been found to reliably identify individuals with high levels of ADHD symptomatology (Kessler et al., 2005). The Deliberate Self-Harm Inventory (DSHI; Gratz, 2001) was used to assess NSSI, whereas the Mini International Neuropsychiatric Interview for DSM-IV (MINI; Sheehan et al., 1998) was used to assess depression and alcohol dependence. The MINI was also used to assess PTSD in approximately half (43%) of the sample, whereas the Clinician-Administered PTSD Scale for DSM-IV (Blake et al., 1995) was used to assess PTSD in the remaining participants. Sheehan et al. (1998) studied the reliability and validity of the MINI in comparison to the Structured Clinical Interview for DSM (Spitzer et al., 1990) among 370 participants and found that, generally speaking, the MINI exhibited strong psychometric properties. For example, Sheehan et al. reported the following statistics for PTSD: kappa=0.78; sensitivity=0.85; specificity=0.96; positive predictive value=0.82; negative predictive value=0.97; efficiency=0.94.

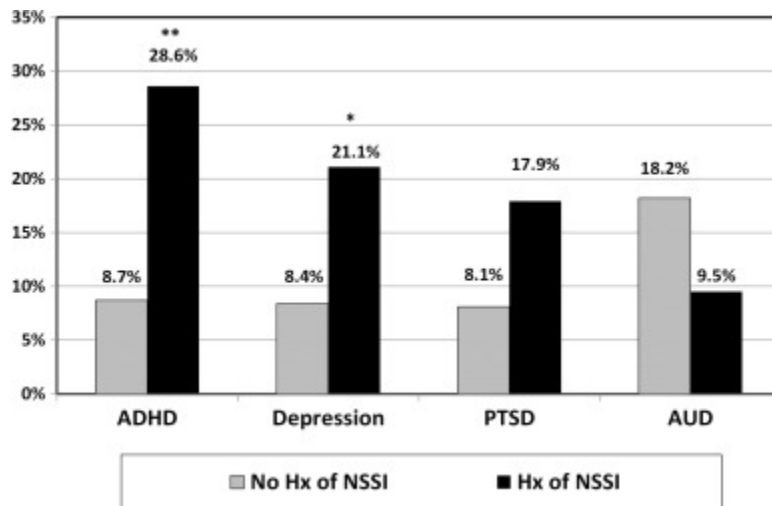
### 2.3. Data analysis plan

Chi-square tests were used to examine the association between NSSI and ADHD, PTSD, depression, and AUD. Logistic regression was used to determine if a positive ADHD screen was associated with NSSI history above and beyond the effects of age, race, ethnicity, PTSD, depression, and AUD.

### 3. Results

Approximately 25% ( $n=38$ ) of the sample screened positive for ADHD on the ASRS; 56% ( $n=78$ ) met criteria for lifetime PTSD; 41% ( $n=57$ ) met lifetime criteria for depression; 53% ( $n=74$ ) met lifetime criteria for an AUD; and 14% ( $n=19$ ) reported a lifetime history of NSSI on the DSHI. As expected, male veterans with PTSD were significantly more likely to report clinically-significant levels of ADHD symptoms compared to male veterans without PTSD (36% vs. 11%,  $\chi^2(1)=11.461$ ,  $p=0.001$ ).

As can be seen in Fig. 1, NSSI was significantly associated with ADHD,  $\chi^2(1)=8.803$ ,  $p=0.003$ , and depression,  $\chi^2(1)=4.508$ ,  $p=0.032$ , at the bivariate level, but was unrelated to PTSD,  $\chi^2(1)=2.877$ ,  $p=0.090$ , and AUD,  $\chi^2(1)=2.263$ ,  $p=0.133$ . In addition, as expected, screening positive for clinically-significant ADHD symptoms was associated with significantly increased risk for NSSI in the logistic regression model,  $AOR=3.509$ ,  $p=0.031$ . The only other significant predictor in the logistic regression model was lifetime AUD, which was associated with decreased risk of NSSI,  $AOR=0.261$ ,  $p=0.028$ . In contrast, age,  $AOR=0.968$ ,  $p=0.325$ , race (coded non-White=0; White=1),  $AOR=0.1.882$ ,  $p=0.346$ , ethnicity (coded non-Hispanic=0; Hispanic=1),  $AOR=1.655$ ,  $p=0.452$ , PTSD ( $AOR=1.112$ ,  $p=0.887$ ), and depression ( $AOR=2.341$ ,  $p=0.204$ ) were all non-significant.



**Fig. 1.** Rates of Nonsuicidal Self-Injury by Type of Psychopathology.

### 4. Discussion

Consistent with the findings of Harrington et al. (2012), ADHD was common among this sample of male veterans, particularly those that had been diagnosed with PTSD. Contrary to

expectations, PTSD was not associated with NSSI in this sample; however, as expected, a positive screen for ADHD was associated with significantly increased risk for NSSI in male veterans at both the bivariate and multivariate levels of analysis. Notably, the association between ADHD and NSSI observed in the present research is highly consistent with recent work by Hinshaw et al. (2012) demonstrating that ADHD was prospectively associated with NSSI in civilians. Furthermore, the fact that this association remained significant after accounting for the effects of PTSD, depression, and AUD suggests that this association is relatively robust and deserving of further study.

#### 4.1. Limitations

The present findings are limited by cross-sectional design, which precludes causal inferences. Longitudinal studies aimed at examining the association between ADHD and NSSI in veterans over time are needed. Another limitation of the present work was our reliance on self-report questionnaires to assess ADHD symptoms and NSSI. Future work would benefit from the use of clinical interviews to assess these conditions. Clinical interviews could also potentially be used to retrospectively assess the temporal course of ADHD symptoms and NSSI. Such an approach was not possible in the current study, as our assessment of ADHD focused on the past six months. A final limitation concerns the fact that the present analyses were conducted on a convenience sample of veterans that was not randomly selected. Thus, the degree to which the present findings might generalize to other cohorts of veterans is unclear.

#### 4.2. Conclusions

In sum, the present study is the first to demonstrate that ADHD symptoms are independently associated with increased risk for NSSI in male veterans, above and beyond the effects of PTSD, depression, and AUD. Future work aimed at replicating and extending these findings in longitudinal studies of veterans is still needed.

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## References

- Arnett, A.B., Pennington, B.F., Willcutt, E.G., DeFries, J.C., Olson, R.K., 2015. Sex differences in ADHD symptom severity. *J. Child. Psychol. Psychiatry* 56, 632–639.
- Blake, D., Weathers, F.W., Nagy, L.M., Kaloupek, D.G., 1995. The development of a Clinician-Administered PTSD Scale. *J. Trauma. Stress* 8, 75–90.
- Gratz, K.L., 2001. Measurement of deliberate self-harm: preliminary data on the Deliberate Self-Harm Inventory. *J. Psychopathol. Behav. Assess.* 23, 253–263.
- Harrington, K.M., Miller, M.W., Wolf, E.J., Reardon, A.F., Ryabchenko, K.A., Ofrat, S., 2012. Attention-deficit/hyperactivity disorder comorbidity in a sample of veterans with posttraumatic stress disorder. *Compr. Psychiatry* 53, 679–690.
- Hinshaw, S.P., Owens, E.B., Zalecki, C., Huggins, S.P., Montenegro-Nevado, A.J., Schrodek, E., Swanson, E.N., 2012. Prospectively follow-up of girls with attention-deficit/hyperactivity disorder into early adulthood: continuing impairment includes elevated risk for suicide attempts and self-injury. *J. Consult. Clin. Psychol.* 80, 1041–1051.
- Kessler, R.C., Adler, L., Ames, M., et al., 2005. The world health organization adult ADHD self-report scale (ASRS): a short screening scale for use in the general population. *Psychol. Med.* 35, 245–256.
- Kimbrel, N.A., Calhoun, P.S., Beckham, J.C., 2017. Nonsuicidal self-injury in men: A serious problem that has been overlooked for too long. *World Psychiatry* 16, 108–109.
- Kimbrel, N.A., DeBeer, B.B., Meyer, E.C., Gulliver, S.B., Morissette, S.B., 2016. Nonsuicidal self-injury and suicide attempts in Iraq/Afghanistan war veterans. *Psychiatr. Res.* 243, 232–237.
- Kimbrel, N.A., Gratz, K.L., Tull, M.T., Morissette, S.B., Meyer, E.C., DeBeer, B.B., Silvia, P.J., Calhoun, P.C., Beckham, J.C., 2015a. Non-suicidal self-injury as a predictor of active and passive suicidal ideation among Iraq/Afghanistan war veterans. *Psychiatr. Res.* 227, 360–362.
- Kimbrel, N.A., Johnson, M.E., Clancy, C., Hertzberg, M., Collie, C., Van Voorhees, E.E., Dennis, M.F., Calhoun, P.S., Beckham, J.C., 2014. Deliberate self-harm in male Iraq/Afghanistan veterans seeking treatment for PTSD. *J. Trauma. Stress* 27, 474–477.
- Kimbrel, N.A., Morissette, S.B., Meyer, E.C., Chrestman, R., Jamroz, R., Silvia, P.J., Beckham, J.C., Young, K.A., 2015b. Effect of the 5-HTTLPR polymorphism on posttraumatic stress disorder, depression, anxiety, and quality of life among Iraq and Afghanistan veterans. *Anxiety Stress Coping* 28, 456–466.
- Klonsky, E.D., Victor, S.E., Saffer, B.Y., 2014. Nonsuicidal self-injury: what we know, and what we need to know. *Can. J. Psychiatry* 59, 565–568.
- Sheehan, D.V., Lecrubier, Y., Sheehan, K., Amorim, P., Janavs, J., Weiller, E., 1998. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J. Clin. Psychiatry* 59, 22–33.

Spitzer, R.L., Williams, J.B.W., Gibbon, M., First, M.B., 1990. Structured Clinical Interview for DSM-III-R. American Psychiatric Press, Washington, DC.