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Letters

COMMENT & RESPONSE

Heart Rate Variability and Posttraumatic Stress Disorder

To the Editor We appreciate the thoughtful editorial by Shah and Vaccarino¹ in *JAMA Psychiatry* in response to our prospective investigation of the association of predeployment heart rate variability (HRV) with postdeployment posttraumatic stress disorder (PTSD) in military service personnel.² We agree that the findings are in need of replication by other groups, particularly with attention to limitations inherent in HRV indices including the low frequency to high frequency ratio, among others.³ Shah and Vaccarino¹ mentioned several concerns, briefly addressed here.

The authors highlighted the attrition rate from predeployment to postdeployment (39% in the first phase of the Marine Resiliency Study [MRS-I] and 36% in the second phase of the Marine Resiliency Study [MRS-II]) as a factor limiting causal inference. The *t* test comparisons between participants with and without a postdeployment visit yielded no differences in predeployment HRV, PTSD symptom scores, or Life Events Checklist scores. However, it remains possible that service members who did not return for their postdeployment assessment (eg, left the military following deployment) may have been a group uniquely affected by deployment. The main causes of attrition were deployment-related death, injury of such severity that postdeployment return with the battalion was precluded, or high mobility (eg, change of battalion, assignment to specialized training, discharge from the military, and interference from a civilian work schedule). Of the available participants for follow-up, only a very small number actively declined to participate in the postdeployment assessment (4% in MRS-I and 0.04% in MRS-II). The MRS attrition rates matched other recent longitudinal studies of PTSD in service members (40% in the study by Stein et al⁴ and 50% in the study by Polusny et al⁵), with causes of attrition (ie, high mobility) being similar across studies.

The authors also commented on the lack of inclusion of factors such as medical history, health behaviors, depression, and trauma history. Our access to medical health records was incomplete; however, it should be noted that owing to deployment requirements, this was a relatively healthy population. When predeployment Beck Depression Inventory 2 scores were included in the regression model, the normalized low frequency to high frequency ratio retained statistical significance as a predictor of postdeployment PTSD (odds ratio, 1.61; 95% CI, 1.11-2.34; *P* = .01). Similar results were obtained with postdeployment Beck Depression Inventory 2

scores. Likewise, when Life Events Checklist scores were included in the regression, again the low frequency to high frequency ratio retained its significance (odds ratio, 1.61; 95% CI, 1.12-2.30; *P* = .01). Therefore, we argue that predeployment HRV, although very likely to be influenced by a host of vulnerability factors, may nevertheless hold independent value in understanding PTSD risk and resilience. We look forward to replication and extension of these findings, which may ultimately provide new targets for prevention and treatment.

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Editorial Note: This letter was shown to the corresponding author of the original article, who declined to reply on behalf of the authors.

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