

# Developing a Measure to Assess Emotions Associated with Never Being Deployed

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**ABSTRACT** Background: Much research has focused on stress related to deployments; however, a substantial proportion of soldiers never deploy. In a study of 1.3 million veterans, suicide risk was higher among veterans who had never deployed. Thus, not being deployed may have an impact on soldiers' well-being; however, no measures exist to assess emotions regarding non-deployment. We aimed to develop and test an original measure of non-deployment emotions. Methods: We examined the Non-Deployment Emotions (NDE) questionnaire, a novel four-item measure of guilt, unit value, unit camaraderie, and unit connectedness in a sample of never-deployed male and female US Army Reserve/National Guard (USAR/NG) soldiers ( $N = 174$ ). Data are from Operation: SAFETY (Soldiers and Families Excelling Through the Years), an ongoing survey-based study examining the health of USAR/NG soldiers and their partners. The protocol was approved by the Institutional Review Board at the State University of New York at Buffalo. The relationship between each of the items was examined by calculating correlation and alpha coefficients. Latent class analyses tested for the existence of distinct levels of negative emotions related to non-deployment. Negative binomial regression models examined the cross-sectional associations between NDE summary score and each of the following outcomes, separately: anger, anxiety, depression, and post-traumatic stress. Findings: More than half of never-deployed USAR/NG soldiers expressed negative emotions for having not been deployed. "Guilt," "value," "camaraderie," and "connectedness" were each positively correlated with each other ( $p < 0.001$ ) and the internal consistency reliability was high (male soldier  $\alpha = 0.90$ , female soldier  $\alpha = 0.93$ ). Latent class analyses revealed a superior three-class model with well-delineated class membership (entropy = 0.93): "Class 1" (low NDE; 47.6%), "Class 2" (moderate NDE; 33.8%), and "Class 3" (high NDE; 18.6%). Regression models demonstrated that greater non-deployment emotions were independently associated with more severe anger (RR = 1.02, 95% CI: 1.01, 1.03,  $p < 0.001$ ), anxiety (RR = 1.06, 95% CI: 1.01, 1.11,  $p < 0.05$ ), depression (RR = 1.06, 95% CI: 1.01, 1.11,  $p < 0.05$ ), and PTSD (RR = 1.10, 95% CI: 1.04, 1.16,  $p < 0.01$ ). Discussion: Findings demonstrate that negative emotions regarding non-deployment are prevalent among never-deployed USAR/NG soldiers and that these emotions are related to a mental health. The NDE provides a measure of "guilt," "value," "camaraderie," and "connectedness" specific to non-deployed soldiers and is able to well discriminate between soldiers that have low, moderately, and highly negative non-deployment emotions. These findings suggest that all military personnel, regardless of deployment status, could be at risk for negative outcomes. As with any survey-based study, there is a potential for response bias; however, given the range of responses collected with the NDE, social desirability is unlikely. Further work is needed to confirm our findings in other components of the military and to examine soldiers in the rear detachment.

## INTRODUCTION

There are over 1 million soldiers enlisted in a Ready Reserve component of the US Military,<sup>1</sup> the greatest proportion of which is composed of US Army Reserve/National Guard (USAR/NG) soldiers at over 40%.<sup>2</sup> Much of the literature on the health and experiences of reserve soldiers focuses on only those that were deployed or on the effects of deployment. Although 49% of Reserve/Guard soldiers are deployed overseas,<sup>3</sup> a significant proportion of Reserve/Guard soldiers do not deploy. Combat deployment is associated with new-onset alcohol problems<sup>4</sup> and post-traumatic stress disorder (PTSD),<sup>5</sup> anxiety, and depression.<sup>6,7</sup> However, not being deployed – either to engage in

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combat in an active war zone or non-combat missions in other perilous environments – may also have an impact on soldiers' mental well-being. Stress related to non-deployment, however, remains an area of research that has not been well-studied.

Non-deployed service members also suffer from mental health conditions; data from the Millennium Cohort Study show that the percentage of new-onset depression among non-deployed service members is higher than that among those who were deployed but not exposed to combat (3.9% vs. 2.3% among male service members and 7.7% vs. 5.1% among female service members).<sup>7</sup> In a recent study of 1.3 million veterans, suicide risk was higher among veterans who had never deployed.<sup>8</sup> However, it is unknown whether this is evidence to support the notion of a "healthy warrior effect,"<sup>9</sup> in which mental health status before deployment influences the likelihood of deployment, or if the event of not being deployed in and of itself contributes to poor mental health.

Reserve/Guard soldiers are particularly at risk for depression, anger, and other health conditions compared with active duty soldiers<sup>10–12</sup> and identify a lack of unit support as a significant source of stress.<sup>13</sup> Unit social support may contribute directly to the mental health of soldiers. Our previous work<sup>14</sup> demonstrated that, among USAR/NG soldiers, poor unit support was independently associated with increased feelings of anger. Sufficient unit support has been shown to be protective against military sexual trauma<sup>15</sup> and PTSD,<sup>16</sup> further demonstrating that feeling supported by one's unit is important for the well-being of USAR/NG soldiers. Whether or not a soldier deploys may affect his or her feelings of unit connectedness; however, this represents a significant gap in the literature.

Deployment is associated with PTSD among soldiers' partners,<sup>17</sup> suggesting that the trauma of deployment extends beyond the soldier that is deployed. The literature demonstrates that soldiers who have not been deployed also suffer from PTSD,<sup>18</sup> but the underlying causes of this symptomology are unclear. Persistent negative emotions, including feelings of guilt, are a symptom of PTSD under the negative cognitions and mood symptom cluster in the DSM-5.<sup>19</sup> Survivor guilt is a phenomenon described in other populations in which an individual experiences feelings of guilt for having remained alive and uninjured when others were physically or psychologically injured.<sup>20</sup> However, it is not known if survivor guilt is universally experienced by never-deployed soldiers and if this phenomenon contributes to PTSD among never-deployed soldiers.

Deployment is an important part of the reserve soldier identity and group membership, both of which play a role in stress among reserve soldiers.<sup>13</sup> Thus, non-deployment may be incongruent to soldiers' identity and contribute to feelings of decreased value, camaraderie, and connectedness within his or her unit. However, there are no validated measures of the soldier's emotions regarding his or her non-deployment. Given the high proportion of USAR/NG soldiers who do not deploy<sup>3</sup> and the role that deployment plays in the reservist's identity, group membership, and behavioral health, we aimed to develop

and test a new measure of non-deployment emotions in a sample of never-deployed USAR/NG soldiers and examine its relationship with a range of validated measures of mental health conditions.

## **MATERIALS AND METHODS**

### **Methods**

The present study examines a subset of the 1-yr follow-up data from Operation: SAFETY (Soldiers and Families Excelling Through the Years), an ongoing survey-based study that aims to examine the health and well-being of USAR/NG soldiers and their partners.<sup>14,21–22</sup> This study was approved by the State University of New York at Buffalo's Institutional Review Board. The research protocol was also vetted through the Army Human Research Protections Office, Office of the Chief, Army Reserve, and the Adjutant General of the National Guard. Additionally, a certificate of confidentiality was obtained from the US Department of Health and Human Services to protect participant information from being disclosed in response to court or other legal orders.

### **Data Collection**

Between the summer of 2014 and the fall of 2015, Operation: SAFETY recruited USAR/NG soldiers and their partners from 47 units across New York, United States. Soldiers were given a brief description of the project and invited to participate. Participation of soldiers and their partners involved the completion of three online surveys (baseline with two yearly follow-ups), covering a variety of general health topics such as nutrition, physical and mental health, caffeine intake, sleep, substance use, romantic relationship, social network information, and deployment information and events. In order to be eligible for the study, all of the following inclusion criteria must have been met: (1) the couple is married or living as if married; (2) one member of the couple dyad is a current Army Reserve Soldier or National Guard Soldier; (3) the soldier is between the ages of 18 and 45 yr; (4) both partners are able to speak and understand English; (5) both partners are willing and able to participate; and (6) both partners have had at least one alcoholic beverage in the past year.

Surveys were administered through a secure HIPAA-compliant online survey programming software, StudyTrax, which allowed for data encryption. Participants living in the Western New York area were invited to the Center for Health Research at the State University of New York at Buffalo to complete their consent and online surveys, either together or separately. For participants living outside of the Western New York area, separate login information was sent to each partners' email. Participants created their own unique password and were then given an online version of the same consent form and survey. Baseline surveys took approximately 2.5 hr to complete, while the follow-ups lasted 90 min. For their time, soldiers and partners each received a \$60 check for baseline

and \$70 for each of the follow-ups (\$200 per person/\$400 for couple over the study period).

## **Participants**

A total of 731 soldiers and partners were eligible for the study. Of those, 572 (78%) agreed to participate and 83% of the couples ( $N = 472$ ) completed some part of the survey. Only surveys in which both partners completed were included for follow-up ( $N = 418$ ). Couples where a civilian partner screened for the study ( $n = 11$ ) were less likely to enroll ( $p < 0.001$ ). There were no differences in soldier health variables between those who enrolled and completed vs. those who enrolled and did not complete.

The present study, a substudy of the parent Operation: SAFETY study, examines 1-yr follow-up data from soldiers who reported never having been deployed ( $N = 174$ ). Participants were predominantly non-Hispanic White (78.2%), had at least some college education (87.4%), and had a median family income between \$40,000 and \$59,999. The majority of the sample was males (69.5%) and had a mean (standard deviation [SD]) age of 30.0 (6.4) yr. Soldiers served an average of 5.2 (3.7) yr in the military.

## **Measures**

### **Non-deployment Emotions**

The goal of this article is to develop and test a new measure to examine the feelings associated with non-deployment, the Non-deployment Emotions (NDE) Questionnaire. The development of the NDE Questionnaire was participant-driven. During the baseline wave of Operation: SAFETY, soldier participants provided study feedback that highlighted the need for a way to assess emotions related to non-deployment in military populations. Existing measures of guilt-related constructs are either too broad in scope to assess non-deployment emotions<sup>23</sup> or are intended for use in other specified populations.<sup>24</sup> None specifically assesses emotional constructs related to military non-deployment. Measures intended for use in military populations tend to focus more specifically on soldiers' deployment<sup>25</sup> and combat experiences.<sup>26</sup> We developed a four-item questionnaire to assess the constructs of guilt, value, camaraderie, and connectedness specific to non-deployment. The addition of the NDE Questionnaire to the study was approved by the Institutional Review Board at the State University of New York at Buffalo and was added to subsequent follow-up interviews of never-deployed soldiers.

We included the constructs of guilt, value, camaraderie, and connectedness in the NDE Questionnaire to capture a range of factors that may influence the risk of mental illness among never-deployed soldiers. Literature suggests that survivor guilt is prevalent in other military populations<sup>27</sup> and that this symptomology is associated with poor mental health.<sup>28</sup> Our previous work<sup>29</sup> demonstrated that perceived social support from unit leaders and unit members was protective against problems with anger among soldiers that had been deployed. These findings

suggest that when examining soldiers' emotional well-being, it is important to consider perceived social support within his or her unit, of which perceived value is a part. Further, evidence demonstrates that camaraderie and social connectedness act as significant buffers against suicide risk among veterans<sup>30</sup> and those in other high-stress occupations.<sup>31</sup>

The NDE Questionnaire assesses the constructs of guilt, value, camaraderie, and connectedness using a series of four questions: "Do/Did you feel guilty for not having been deployed?"; "Do/Did you feel less valuable as a member of your unit because you have not been deployed?"; "Do/Did you feel less camaraderie with your unit because you have not been deployed?"; and "Do/Did you feel less connected with your unit because you have not been deployed?" Each question was scored 0–4 on a Likert scale with responses ranging from "Not at all" to "Extremely." Item scores were summed together to create a single summary score. Summary scores can range from 0 to 16, with higher scores indicating more negative emotions regarding non-deployment.

### **Anger**

Anger was assessed using the Adult Anger Short Form from the Emotional Distress Scale of the Patient Reported Outcomes Measurement Information System (PROMIS).<sup>32</sup> This eight-item measure assesses the frequency that the respondent experienced various states of anger in the past 7 d. Items include statements such as "I was irritated more than people knew" and "I felt angrier than I thought I should." Each item was scored 1–5 on a Likert scale with responses ranging from "Never" to "Always." Scores can range from 8 to 40, with higher scores indicating greater anger. The Adult Anger Short Form had high internal consistency reliability in our sample (male  $\alpha = 0.94$ , female  $\alpha = 0.94$ ).

### **Anxiety**

Anxiety was assessed with 10 items based upon the "emerging measures" from DSM-5.<sup>33</sup> The items examine the past 7 d on a Likert scale scored 0–4 ranging from "Never" to "All of the time." Example items include "Felt moments of sudden terror, fear or fright" and "Felt anxious, worried, or nervous." Scores range from 0–40, with higher scores indicating a greater severity of anxiety. The internal consistency reliability for the Severity Measure for Generalized Anxiety Disorder was high in our sample (male  $\alpha = 0.91$ , female  $\alpha = 0.90$ ).

### **Depression**

Depression was assessed using the eight-item Patient Health Questionnaire (PHQ-8)<sup>34</sup>, a modified version of the nine-item Patient Health Questionnaire (PHQ-9).<sup>35</sup> The PHQ-8 assesses the frequency that the respondent has been affected by depressed states over the past 2 wk, such as "Feeling down, depressed, or hopeless" and "Feeling bad about yourself." The PHQ-8 differs from the PHQ-9 in that it does not include an item assessing suicidal/self-injurious thoughts. Due to the



nature of a web-based assessment, immediate intervention could not be ensured for participants at risk for immediate self-harm. However, the PHQ-8 has been shown to be a valid and reliable measure of current depression for use in the general population.<sup>34</sup> Items are scored 0–3 on a Likert scale ranging from “Not at all” to “Nearly every day.” Scores range from 0 to 24, with higher scores indicating a greater severity of depression. The PHQ-8 had high internal consistency reliability in our sample (male  $\alpha = 0.90$ , female  $\alpha = 0.91$ ).

### Post-traumatic Stress

Post-traumatic stress was assessed using the 20-item Posttraumatic Stress Disorder Checklist (PCL-5)<sup>36</sup> that evaluates the 20 DSM-5 symptoms of PTSD across the symptom clusters. Respondents are asked to indicate how much they are bothered by each PTSD symptom over the past month. Example items include “Repeated, disturbing, and unwanted memories of the stressful experience” and “Having strong negative feelings such as fear, horror, anger, guilt, or shame.” Items are scored 0–4 on a Likert scale ranging from “Not at all” to “Extremely.” We used the total symptom severity scoring method and scores range from 0 to 80, with higher scores indicating a greater severity of PTSD. The internal consistency reliability for the PCL-5 was high in our sample (male  $\alpha = 0.95$ , female  $\alpha = 0.95$ ).

### Covariates

Several variables were included in the adjusted analyses examining the associations between emotions related to non-deployment and mental health conditions. These covariates were years of military service, number of close military friends in social network, marital satisfaction, and sex. We included years of military service and number of military friends in social network in our adjusted models because the duration of time in the military without being deployed and number of friends who may have been deployed may affect an individual’s emotions regarding their own non-deployment. Years of military service included the total years of active duty service (if applicable) and years of Reserve/Guard service. Consistent with other work,<sup>37</sup> military social network friends were identified as those currently serving in any branch of the military and who the participant defined as someone who provided him or her with emotional support, someone who he or she socialized with regularly, someone who helped him or her with practical or financial problems, and/or someone who was important to him or her. Our previous work<sup>29</sup> demonstrated that marital satisfaction is a strong resiliency factor against poor mental health among USAR/NG soldiers, including anger, anxiety, depression, and PTSD. The Marital Adjustment Test (MAT),<sup>38</sup> a 15-item Likert-based scale, was used to assess marital satisfaction. Questions include the extent of agreement with their spouse on issues such as “Handling family finances,” “Demonstrations of affection,” and “Philosophy of life.” In addition, questions assess the degree of happiness that the individual has in their

relationship, as well as whether or not they would marry their spouse again, “if [they] had to live [their] life over again.” Responses to each question are summed for a total relationship satisfaction score, and higher scores indicate a stronger marriage/romantic partnership. The MAT had good reliability in our sample (male  $\alpha = 0.76$ , female  $\alpha = 0.79$ ). Lastly, research has shown differences in the prevalence and severity of mental health conditions in military populations according to sex.<sup>39–41</sup> To control for these differences, we included a dichotomous variable for sex (male/female) in our adjusted models.

### Analysis

All analyses were performed using Stata version 14.2 software (Stata Corporation, College Station, TX, USA). First, we calculated descriptive statistics to describe the distribution of responses to each of the NDE items: guilt, value, camaraderie, and connectedness, for both male and female soldiers. We also examined the relationship between each of the NDE items by calculating correlation coefficients and alphas. To test for the existence of distinct levels of negative emotions related to non-deployment, we performed a series of latent class analyses (LCA)<sup>42</sup> on the NDE Questionnaire using the four aforementioned items as the basis of the LCA, testing models with one to four classes. Model selection was based on the following indices of fit: Akaike’s Information Criterion (AIC), Bayesian Information Criterion (BIC), and Entropy. AIC<sup>43</sup> and BIC<sup>44</sup> are interpreted in the context of comparative models, with lower values representing a better fitting model. Entropy is an indication of delineation of classes, with values approaching 1 indicating a clear delineation of class membership.<sup>45</sup> We then conducted latent class analyses with the best fitting model, reporting gamma and rho estimates for probability of class membership and item response, respectively. Finally, we used negative binomial regression models to examine the cross-sectional associations between NDE summary score and each of the following mental health symptoms, separately: anger, anxiety, depression, and post-traumatic stress. Risk ratios and 95% confidence intervals are reported. Full regression models were adjusted for years of military service, number of military friends in social network, marital satisfaction, and sex.

### RESULTS

The majority of soldiers expressed having some negative emotions for having not been deployed (Table I). Among never-deployed USAR/NG soldiers, 64% felt guilty, 59% felt less valued by his or her unit, 49% felt less camaraderie with his or her unit, and 50% felt less connected with his or her unit because he or she had not been deployed. The mean item scores ranged from 0.9 to 1.3 and all item responses ranged from 0 to 4. The mean (SD) summary score was 4.3 (4.3) and summary scores ranged from 0 to 16.

The NDE items of guilt, value, camaraderie, and connectedness were each positively correlated with each other. For

example, the Pearson product-moment correlation coefficient was 0.76 ( $p < 0.001$ ) for guilt and value and 0.90 ( $p < 0.001$ ) for camaraderie and connectedness (Table II). The internal consistency reliability for the four NDE items was high (male soldier  $\alpha = 0.90$ , female soldier  $\alpha = 0.93$ ).

Latent class analyses indices of model fit are reported in Table III. The three-class model had a superior fit over the other models with the lowest AIC and BIC (369.53 and 527.48, respectively). The three-class model also had a clearer delineation of class membership (entropy = 0.93) compared with the other models. The characteristics of the three NDE classes are described below and presented in Table IV.

- Class 1 (low negative non-deployment emotions; 47.60%): This group had the highest probability of a “Not at all” response for all the four NDE items: guilt ( $\rho = 0.6$ ), value ( $\rho = 0.8$ ), camaraderie ( $\rho = 1.0$ ), and connectedness ( $\rho = 0.9$ ).
- Class 2 (moderately negative non-deployment emotions; 33.75%): This group had the highest probability of an “A little bit” response for all the four NDE items: guilt ( $\rho = 0.4$ ), value ( $\rho = 0.5$ ), camaraderie ( $\rho = 0.7$ ), and connectedness ( $\rho = 0.7$ ).
- Class 3 (highly negative non-deployment emotions; 18.64%): This group had the highest probability of a “Quite a bit” response for all the four NDE items: guilt ( $\rho = 0.5$ ), value ( $\rho = 0.5$ ), camaraderie ( $\rho = 0.5$ ), and connectedness ( $\rho = 0.5$ ).

A sizable proportion of this never-deployed sample screened positive at subclinical and clinical levels of mental health conditions. Among this sample, the mean (SD) anger score was 17.3 (6.3) and the mean anxiety score was 4.0 (5.3). The mean (SD) depression score was 2.8 (3.8) and nearly a quarter of the sample screened positive for depression: 16.1% mild, 4.0% moderate, 0.6% moderately severe, and 1.2% severe. The mean (SD) PTSD score was 7.0 (11.4) and 5.8% of the sample screened positive for PTSD, with a score  $\geq 31$ .<sup>46</sup>

The cross-sectional associations between negative non-deployment emotions and measures of mental health are presented in Table V. More negative emotions regarding non-deployment were significantly associated with greater anger (risk ratio [RR]

= 1.03, 95% confidence interval [CI]: 1.01, 1.04,  $p < 0.001$ ), anxiety (RR = 1.08, 95% CI: 1.03, 1.12,  $p < 0.01$ ), depression (RR = 1.08, 95% CI: 1.03, 1.13,  $p < 0.01$ ), and post-traumatic stress (RR = 1.11, 95% CI: 1.05, 1.17,  $p < 0.001$ ). The associations between non-deployment emotions and anger (RR = 1.02, 95% CI: 1.01, 1.03,  $p < 0.001$ ), anxiety (RR = 1.06, 95% CI: 1.01, 1.11,  $p < 0.05$ ), depression (RR = 1.06, 95% CI: 1.01, 1.11,  $p < 0.05$ ), and PTSD (RR = 1.10, 95% CI: 1.04, 1.16,  $p < 0.01$ ) persisted even after controlling for years of military service, number of military friends in social network, marital satisfaction, and sex.

## DISCUSSION

Our findings show that more than half of never-deployed USAR/NG soldiers express moderately to highly negative non-deployment emotions. USAR/NG soldiers' experiences and mental health needs should be interpreted within the context of the reserve identity, of which deployment and group membership are central components.<sup>13</sup> Not deploying may conflict with the soldier identity and contribute to additional stress for the non-deployed soldier. Reserve/Guard soldiers typically perform 39 d of military service annually and participate in monthly weekend drills and several days of training.<sup>10</sup> However, deployment length is highly variable and mobilized troops in war zones may serve a year or more,<sup>47</sup> which likely contributes to the soldier's perceived value, camaraderie, and connectedness within their unit. Our findings demonstrate that emotions regarding non-deployment are varied among USAR/NG soldiers, a substantial proportion of which has moderately and highly negative emotions regarding non-deployment, and that these emotions are related to anger, anxiety, depression, and post-traumatic stress.

Not deploying has also been associated with stressors beyond struggling with identity and group connectedness. Survey data from Army National Guard soldiers indicate that non-deployed soldiers perceive themselves as less prepared for combat and self-sacrifice (i.e., physical injury and death) than their deployed counterparts.<sup>48</sup> Although PTSD in military populations is often associated with combat experiences,<sup>49</sup> the event of not deploying may result in traumatic stress for the

**TABLE I.** Descriptive Statistics of Non-deployment Emotions Items

Item	Question	Mean (SD) [Range]	0 – Not at All % (N)	1 – A Little Bit % (N)	2 – Moderately % (N)	3 – Quite a Bit % (N)	4 – Extremely % (N)
Guilt	Do/Did you feel guilty for not having been deployed?	1.3 (1.2) [0–4]	35.6 (62)	28.2 (49)	16.1 (28)	14.9 (26)	5.2 (9)
Value	Do/Did you feel less valuable as a member of your unit because you have not been deployed?	1.1 (1.2) [0–4]	41.4 (72)	27.0 (47)	14.4 (25)	11.5 (20)	5.8 (10)
Camaraderie	Do/Did you feel less camaraderie with your unit because you have not been deployed?	0.9 (1.2) [0–4]	51.2 (89)	23.6 (41)	10.3 (18)	10.9 (19)	4.0 (7)
Connectedness	Do/Did you feel less connected with your unit because you have not been deployed?	0.9 (1.2) [0–4]	50.0 (87)	24.7 (43)	11.5 (20)	9.2 (16)	4.6 (8)

non-deployed reservist. Evidence suggests that individuals who do not directly experience a traumatic event (e.g., combat deployment to an active war zone) can be negatively affected via “vicarious trauma”; work by Homish et al<sup>50</sup> demonstrated that firefighters had an increased risk of alcohol consumption following a large-scale, community-level disaster despite not responding to the critical event. First responders belong to a

cohesive social network defined by a shared willingness to face danger and help one another,<sup>51</sup> similar to that of soldiers. This type of social connectedness may contribute to the contagious nature of negative emotional states and behaviors.<sup>52</sup> Further, research conducted by Tillman et al<sup>53</sup> found that clinicians who imagined a patient completing suicide endorsed greater distress than clinicians who actually experienced a patient completing suicide, suggesting that experiencing a traumatic event may provide an opportunity to reprocess memories of prior trauma, thereby reducing PTSD symptomology. It is not known if deployment can act as a catalyst for symptom reduction in this way. Multiple studies have demonstrated a greater risk for post-deployment PTSD among reserve soldiers compared with active duty soldiers.<sup>54–56</sup> Given that reserve soldiers are more susceptible to mental health problems,<sup>57</sup> they may also experience greater effects of non-deployment than active duty soldiers who are not deployed.

Our findings demonstrate that non-deployment emotions are associated with a range of mental health conditions, suggesting that non-deployment emotions are important to consider in the overall health and well-being of reserve soldiers. Although it is agreed that military cultural competence is essential to the effective delivery of health care to service members, a recent report from RAND (2014) suggests that less than half of community mental health providers regularly screen for both military status and stressors related to military life.<sup>58</sup> Further, curricula to advance this competence in community settings

**TABLE II.** Correlations Between Non-deployment Emotions Items

	Guilt	Value	Camaraderie	Connectedness
Guilt	1.00			
Value	0.76***	1.00		
Camaraderie	0.56***	0.81***	1.00	
Connectedness	0.57***	0.78***	0.90***	1.00

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

**TABLE III.** Latent Class Analysis Indices of Fit

Model	AIC	BIC	Entropy
1 Class	749.65	800.20	
2 Classes	468.79	573.03	0.90
<b>3 Classes</b>	<b>369.53</b>	<b>527.48</b>	<b>0.93</b>
4 Classes	371.42	583.08	0.92

AIC, Akaike’s Information Criterion; BIC, Bayesian Information Criterion. Bold values indicate superior fitting model.

**TABLE IV.** Three-Class Model of Non-deployment Emotions

Item response probabilities	Latent Class		
	1 (47.60%)	2 (33.75%)	3 (18.64%)
Do/Did you feel guilty for not having been deployed?			
Not at all	<b>0.584</b>	0.214	0.031
A little bit	0.261	<b>0.421</b>	0.082
Moderately	0.117	0.223	0.161
Quite a bit	0.026	0.124	<b>0.510</b>
Extremely	0.012	0.018	0.216
Do/Did you feel less valuable as a member of your unit because you have not been deployed?			
Not at all	<b>0.778</b>	0.129	0.000
A little bit	0.198	<b>0.521</b>	0.000
Moderately	0.015	0.292	0.204
Quite a bit	0.009	0.058	<b>0.488</b>
Extremely	0.000	0.000	0.308
Do/Did you feel less camaraderie with your unit because you have not been deployed?			
Not at all	<b>1.000</b>	0.105	0.000
A little bit	0.000	<b>0.698</b>	0.000
Moderately	0.000	0.152	0.280
Quite a bit	0.000	0.045	<b>0.505</b>
Extremely	0.000	0.000	0.216
Do/Did you feel less connected with your unit because you have not been deployed?			
Not at all	<b>0.944</b>	0.135	0.028
A little bit	0.056	<b>0.653</b>	0.000
Moderately	0.000	0.193	0.267
Quite a bit	0.000	0.019	<b>0.458</b>
Extremely	0.000	0.000	0.247

Bold values indicate response with the highest probability per item.

**TABLE V.** Cross-sectional Associations Between Non-deployment Emotions and Mental Health Measures

	Anger RR [95% CI]		Anxiety RR [95% CI]		Depression RR [95% CI]		Post-traumatic Stress RR [95% CI]	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Non-deployment emotions	1.03*** [1.01, 1.04]	1.02*** [1.01, 1.03]	1.08** [1.03, 1.12]	1.06* [1.01, 1.11]	1.08** [1.03, 1.13]	1.06* [1.01, 1.11]	1.11*** [1.05, 1.17]	1.10** [1.04, 1.16]
Years of military service		1.00 [0.99, 1.01]		1.02 [0.96, 1.07]		1.03 [0.98, 1.08]		0.99 [0.93, 1.05]
Military friends in social network		1.00 [0.95, 1.05]		0.93 [0.76, 1.13]		0.88 [0.71, 1.08]		0.83 [0.66, 1.04]
Marital satisfaction		0.99*** [0.99, 0.99]		1.00 [0.99, 1.00]		0.99** [0.98, 0.99]		0.98** [0.97, 0.99]
Sex		1.11 [1.00, 1.24]		1.86** [1.20, 2.87]		1.50 [0.97, 2.32]		1.11 [0.65, 1.90]

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

tend to emphasize the effects of combat deployments to active war zones.<sup>59</sup> Although the DSM-5 indicates that persistent negative emotions are a symptom of PTSD<sup>60</sup> and our findings suggest that greater non-deployment emotions are associated with more severe PTSD symptoms, the non-deployed soldier may never be assessed for this condition. The NDE may be useful in identifying soldiers who have PTSD-like symptoms who may not have otherwise been screened for the condition due to their non-deployment. Research suggests that approximately one in four veterans suffers from subclinical PTSD,<sup>61</sup> which has been associated with poor sleep quality and increased hostility.<sup>62</sup> Further, evidence suggests that subthreshold PTSD may produce similar levels of distress and impairment as clinical PTSD.<sup>63</sup> In addition, our previous work has demonstrated that persistent negative emotions, including those of guilt, are independently associated with greater odds of substance use among male and female USAR/NG soldiers.<sup>64</sup> The NDE may have clinical utility for enhanced mental health screening among non-deployed soldiers who may not otherwise be screened for mental health conditions.

Although our findings demonstrate that never-deployed soldiers experience negative non-deployment emotions and that these emotions are associated with poor mental health, we cannot conclude that non-deployment contributes to poor mental health. Work by Blossnich et al (2014) showed that adverse childhood experiences contribute to poor mental health and are more prevalent among military service members than the general population.<sup>65</sup> Research by Wilson and colleagues (2009) suggests a modest “healthy warrior effect”; that is, greater PTSD symptomology is associated with a lower likelihood of ever being deployed.<sup>9</sup> It is unclear why those who do not deploy tend to be more symptomatic than those who do.

## LIMITATIONS

The findings of this study should be considered within the context of its limitations. First, as with any survey-based study, there is a potential for response bias; however, given the wide range of responses collected with the NDE, social desirability is unlikely. Second, the NDE was self-administered. It is possible that responses to the NDE may differ if administered as an interview, particularly in a clinical setting. Lastly, we were unable to examine differences between soldiers who were in units that did not deploy and soldiers in the rear detachment, and there may be differences in non-deployment emotions based on whether or not his or her unit deployed.

## CONCLUSION

Our findings demonstrate that the NDE provides a measure of the constructs of guilt, value, camaraderie, and connectedness specific to non-deployed military populations and that this instrument is able to well discriminate between soldiers that have low, moderately, and highly negative non-deployment emotions. Further psychometric testing is needed to confirm our findings with other components of the US Military,



including active duty service members, and in larger samples. Additional research is needed to examine the effect of adverse childhood experiences on non-deployment emotions among never-deployed soldiers. Future studies should also examine the differences in non-deployment emotions between soldiers who were in units that did not deploy and soldiers in the rear detachment. Moreover, there is a need for further work to assess the potential clinical applicability of the NDE in mental health screening for non-deployed soldiers.

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