



# THE PRIMARY CARE COMPANION FOR CNS DISORDERS

## **Supplementary Material**

**Article Title:** Resilience in the Face of the COVID-19 Pandemic: National Study of US Military Veterans

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## Methods Supplement

### *Sample*

The National Health and Resilience in Veterans Study (NHRVS) is a nationally representative survey of U.S. veterans. A total of 4,069 veterans completed a Wave 1 pre-pandemic (median completion date: 11/21/2019) survey prior to the first documented COVID-19 case in the U.S. and 3,078 completed a Wave 2 peri-pandemic follow-up assessment one year later (median completion date: 11/14/2020) during the fall/winter pandemic surge and prior to the vaccine availability for the general public. A total of 7,860 veterans were invited to participate in the study and 4,069 completed Wave 1 (51.8% participation rate); of these 4,069 veterans, 3,929 (96.6%) remained in the survey panel when the Wave 2 follow-up survey was launched and 3,078 completed this follow-up survey (78.3% participation rate and 75.6% of the baseline cohort).

The NHRVS sample was drawn from KnowledgePanel, a research panel of more than 50,000 households that is maintained by Ipsos, a survey research firm. KnowledgePanel® is a probability-based, online non-volunteer access survey panel of a nationally representative sample of U.S. adults that covers approximately 98% of U.S. households. Panel members are recruited through national random samples, originally by telephone and now almost entirely by postal mail. Households are provided with access to the Internet and computer hardware if needed. KnowledgePanel® recruitment uses dual sampling frames that include both listed and unlisted telephone numbers, telephone and non-telephone households, and cell-phone-only households, as well as households with and without Internet access.

Demographic data of survey panel members are assessed regularly by Ipsos using the same set of questions used by the U.S. Census Bureau. Race/ethnicity was assessed via self-report using a standard set of questions used by the U.S. Census Bureau; this information was assessed in the current study to characterize the demographic composition of the sample and to adjust for any influence of race/ethnicity in a multivariable model examining the relation between pre- and peri-pandemic factors associated with resilience to COVID-19-related stressor.

To permit generalizability of study results to the entire population of U.S. veterans, the Ipsos statistical team computed post-stratification weights using the following benchmark distributions of U.S. military veterans from the most recent (August 2019) Current Veteran Population Supplemental Survey of the U.S. Census Bureau's American Community Survey: age, gender, race/ethnicity, Census Region, metropolitan status, education, household income, branch of service, and years in service. An iterative proportional fitting (raking) procedure was used to produce the final post-stratification weights.

All participants provided informed consent and the study was approved by the Human Subjects Committee of the VA Connecticut Healthcare System.

American Association for Public Opinion Research Survey Disclosure Checklist:

Survey sponsor	U.S. Department of Veterans Affairs National Center for Posttraumatic Stress Disorder
Survey/Data collection supplier	Ipsos, Inc.
Population represented	U.S. military veterans in the United States
Sample size	3,078
Mode of data collection	Web-based survey panel
Type of sample (probability/non-probability)	Probability
Start and end dates of data collection	November 9, 2020 to December 19, 2020
Margin of sampling error for total sample	±2.57 percentage points at the 95% confidence level
Are the data weighted?	Yes, using the following benchmark distributions of U.S. military veterans from the most recent (August 2019) Current Veteran Population Supplemental Survey of the U.S. Census Bureau's American Community Survey: gender, race/ethnicity, Census Region, metropolitan status, education, household income, branch of service, and years in service
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**Supplemental Table 1.** Study measures

<b>Psychopathology Measures</b>	<b>Assessment Timepoint: Wave 2</b>
COVID-19-related posttraumatic stress symptoms (PTSS)	A brief, 4-item version of the PTSD Checklist for DSM-5 <sup>1,2</sup> was used to assess COVID-19 pandemic-related PTSS symptoms (score range=0-16; $\alpha$ =0.76; sample item: “Thinking about the Coronavirus/COVID-19 pandemic, please indicate how much you have been bothered by repeated, disturbing, and unwanted memories of the COVID-19 pandemic”)
Depressive and anxiety symptoms	The Patient Health Questionnaire-4 (PHQ-4) <sup>3</sup> was used to assess depressive and anxiety symptoms. Scores $\geq 3$ on the depressive ( $\alpha$ =0.84) and anxiety ( $\alpha$ =0.86) items are indicative of positive screens for depression and anxiety.
<b>COVID-19 stressors</b>	<b>Assessment Timepoint: Wave 2</b>
COVID-19 infection status	COVID-19 infection status of veterans, household members, and non-household members were assessed using a questionnaire developed by the National Center for PTSD. <sup>4</sup> COVID-19 infection status was assessed using the question: “Have any of the following people ever had COVID-19? You; Someone who lives in your home; and Someone close to you who does not live in your home (for example, a friend, a family member who does not live with you, a co-worker, or child care provider.” Response options were: Yes, tested positive for COVID-19 or COVID-19 antibodies; Probably, but never received a diagnosis; and No, have never had COVID-19 or a suspected case.
COVID-19-associated exposures and worries	Questions from the Coronavirus Health Impact Survey <sup>5</sup> were used to assess COVID-19-associated worries and concerns at Wave 2. Factor analysis revealed that these items loaded on five factors (eigenvalues=1.01-4.94): COVID-19-associated worries (e.g., “In the past month, how worried have you been about being infected with coronavirus?”); COVID-19 social restriction stress (e.g., “How stressful have these changes in social contacts been for you?”); COVID-19-associated financial hardship (e.g., “In the past month, to what degree have changes associated to the pandemic created financial problems for you or your family?”); and COVID-19-associated relationship difficulties (e.g., “Has the quality of the relationships between you and members of your family changed?”).
<b>Independent variables</b>	<b>Assessment Timepoint: Wave 1</b>
<i>Sociodemographic characteristics</i>	A general sociodemographic questionnaire was used to assess age, gender, race/ethnicity, education, marital status, employment status, and annual household income
<i>Military characteristics</i>	

Combat veteran status	“Did you ever serve in a combat or war zone?”
Years in military	“How many years did you spend in the military?”
Positive effect of military on life	“How has being in the military affected your life?”; Score range: 1-7 (1=Strong negative effect; 7=Strong positive effect)
<i>Trauma and Health characteristics</i>	
Adverse childhood experiences	Score on Adverse Childhood Experiences Questionnaire. <sup>6</sup>
Cumulative trauma burden	Count of potentially traumatic events on the Life Events Checklist for DSM-5 (LEC-5). <sup>7</sup> The LEC-5 was administered at the pre-pandemic and peri-pandemic assessments, with the latter assessment asking respondents to endorse exposure to potentially traumatic events over the past year.
Physical health difficulties factor	
Number of medical conditions	Sum of number of medical conditions endorsed in response to question: “Has a doctor or healthcare professional ever told you that you have any of the following medical conditions?” (e.g., arthritis, cancer, diabetes, heart disease, asthma, kidney disease). Range: 0-24 conditions.
Somatic symptoms	Score on Somatization subscale of the Brief Symptom Inventory-18 ( $\alpha=0.77$ ). <sup>8</sup>
ADL disability	Any disability in activities of daily living. The following question was asked: “At the present time, do you need help from another person to do the following?” (e.g., bathe; walk around your home or apartment; get in and out of chair). Endorsement of any of these activities was indicative of having a disability with an activity of daily living. <sup>9</sup>
IADL disability	Any disability in instrumental activities of daily living. The following question was asked: “At the present time, do you need help from another person to do the following?” (e.g., pay bills or manage money; prepare bills; get dressed). Endorsement of any of these activities was indicative of having a disability with an instrumental activity of daily living.
Physical exercise	Score on Godin Leisure-Time Exercise Questionnaire. <sup>10</sup>
MDD and/or PTSD	At Wave 1, a positive screen for MDD was assessed using the MDD module of the Mini Neuropsychiatric Interview. <sup>11</sup> PTSD was assessed using the PTSD Checklist for DSM-5.
AUD and/or DUD	At Wave 1, a positive screen for AUD and/or DUD on the alcohol and drug use disorder modules of the Mini Neuropsychiatric Interview, <sup>11</sup> respectively.
Mental health treatment	Have you ever received mental health treatment (e.g., prescription medication or psychotherapy) for a psychiatric or emotional problem?

Loneliness	The Three-Item Loneliness Scale <sup>12</sup> was used to assess loneliness at the pre- ( $\alpha=0.86$ ) and peri- ( $\alpha=0.87$ ) pandemic assessments. Change in loneliness was computed by subtracting pre-pandemic scores from peri-pandemic scores.
<i>Protective psychosocial characteristics</i>	
Resilience	Score on Connor-Davidson Resilience Scale-10 ( $\alpha=0.91$ ). <sup>13</sup>
Purpose in life	Score on Purpose in Life Test-Short Form ( $\alpha=0.89$ ). <sup>14</sup>
Dispositional optimism	Score on single-item measure of optimism from Life Orientation Test-Revised <sup>15</sup> ; “In uncertain times, I usually expect the best”); rating 1=strongly disagree to 7=strongly agree.
Dispositional gratitude	Score on single-item measure of gratitude from Gratitude Questionnaire <sup>16</sup> ; “I have so much in life to be thankful for” (rating 1=strongly disagree to 7=strongly agree).
Curiosity/exploration	Score on single-item measure of curiosity/exploration from Curiosity and Exploration Inventory-II <sup>17</sup> ; “I frequently find myself looking for new opportunities to grow as a person (e.g., information, people, resources)” rating 1=strongly disagree to 7=strongly agree.
Grit	Score on Short Grit Scale. <sup>18</sup>
Community integration	Perceived level of community integration: “I feel well integrated in my community (e.g., regularly participate in community activities)” rating 1=strongly disagree to 7=strongly agree.
Mindfulness	Score on the following three items from the Mindful Attention Awareness Scale ( $\alpha=0.90$ ) <sup>19</sup> : “It seems I am ‘running on automatic’ without much awareness of what I am doing;” “I find myself doing things without paying attention;” and “I rush through activities without being really attentive to them.” Items were scored so that higher scores indicate greater mindfulness.
<i>Positive expectations regarding aging</i>	
Expectations regarding physical aging	Score on expectations regarding physical aging item from the Expectations Regarding Aging scale <sup>20</sup> : “Every year that people age, their energy levels go down a little more.”
Expectations regarding emotional aging	Score on expectations regarding emotional aging item from the Expectations Regarding Aging scale: “It is normal to be depressed when you are old.”
Expectations regarding cognitive aging	Score on expectations regarding cognitive aging item from the Expectations Regarding Aging scale: “Forgetfulness is a natural occurrence just from growing old.”
<i>Social connectedness</i>	
Structural social support	Response to question: “About how many close friends and relatives do you have (people you feel at ease with and can talk to about what is on your mind)?”
Perceived social support	Score on 5-item version of the Medical Outcomes Study Social Support Scale that was administered at Wave 1 pre-pandemic ( $\alpha=0.89$ ) and Wave 2 peri-pandemic ( $\alpha=0.91$ )

	assessments. <sup>21,22</sup> Change in perceived social support was computed by subtracting pre-pandemic scores from peri-pandemic scores.
Attachment style	Endorsement of secure attachment (response a) to the following question: “Please select the statement below that best describes your feelings and attitudes in relationships <sup>23</sup> : (a) feeling that it is easy to get close to others and feeling comfortable with them (secure); (b) feeling uncomfortable being close to others (avoidant); or (c) feeling that others are reluctant to get close (anxious/ambivalent).
<i>Religiosity/spirituality</i>	
Religious service attendance	Frequency of attending religious services on Duke University Religion Index. <sup>24</sup>
Private spiritual activities	Frequency of private spiritual activities on Duke University Religion Index.
Intrinsic religiosity	Score on measure of intrinsic religiosity on Duke University Religion Index ( $\alpha=0.91$ ); sample item: “In my life, I experience the presence of the Divine (i.e., God)”
<i>Altruism</i>	
Altruistic behavior	Frequency of engagement in helping others with instrumental activities of daily living <sup>25</sup> : “How often have you helped a friend, neighbor, or relative other than your spouse or partner with errands, child care, housework, transportation, or other tasks in the past year?” (Response options: Never, 1 to 10 times, 11-50 times, 51-99 times, and 100 or more times).
Provision of social support	Score on modified 5-item version of the Medical Outcomes Study Social Support Scale ( $\alpha=0.88$ ) <sup>21,22</sup> that assesses the extent to which an individual provided support to others (e.g., “How often do you provide the following kinds of support to others who need it? – I am someone that helps others with daily chores if they were sick.”
Posttraumatic Growth	The Posttraumatic Growth Inventory-Short Form <sup>26</sup> was used to assess posttraumatic growth in relation to veterans’ ‘worst’ traumatic event endorsed on the LEC-5 at pre-pandemic assessment. Five subscale scores were generated: Appreciation of life ( $\alpha=0.78$ ); Relating to Others ( $\alpha=0.77$ ); Personal Strength ( $\alpha=0.83$ ); Spiritual Changes ( $\alpha=0.88$ ); and New Possibilities ( $\alpha=0.74$ ).
Abbreviations: ADL=activities of daily living, AUD=alcohol use disorder, DUD=drug use disorder, IADL=instrumental activities of daily living, MDD=major depressive disorder, PTSD=posttraumatic stress disorder	

Supplemental Table 2 shows results of a multiple regression analysis that was used to derive discrepancy-based psychological resilience (DBPR) scores. Having a household member infected with COVID-19; COVID-19-related concerns, social restriction stressors, worsening of relationships; and traumas since Wave 1 emerged as significant correlates of COVID-19 pandemic-related psychological distress. Residual scores from this analysis were saved and inverted to yield DBPR scores, with higher scores indicating greater resilience to COVID-related stressors.

**Supplemental Table 2.** Association of COVID-19-related stressors and composite measure of COVID-19 pandemic-related PTSS, MDD, and GAD symptoms (model  $R^2=0.30$ )

	N (weighted % or weighted mean (SD))	$\beta$	p
Infected with COVID-19	233 (8.2%)	0.02	0.34
Household member infected with COVID-19	198 (7.5%)	0.05	0.047
Non-household member infected with COVID-19	1,285 (41.4%)	0.01	0.51
Know someone who died of COVID-19 complications	177 (5.5%)	-0.02	0.15
Hours consume COVID-related media per week	1.6 (2.1)	0.01	0.51
COVID-19-related worries and concerns	0 (1.0)	0.22	<0.001
COVID-19-related social restriction stress	0 (1.0)	0.32	<0.001
COVID-19-related financial stressors	0 (1.0)	0.31	<0.001
COVID-19-related worsening relationships	0 (1.0)	0.10	<0.001
Sum of traumas since Wave 1 assessment	1.0 (1.8)	0.12	<0.001

*Note.* COVID-19=coronavirus disease 2019. GAD=generalized anxiety disorder, MDD=major depressive disorder, PTSS=posttraumatic stress symptoms.



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