Development and Initial Validation of the Response to Stressful Experiences Scale

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ABSTRACT This report describes the development and initial validation of the Response to Stressful Experiences Scale (RSES), a measure of individual differences in cognitive, emotional, and behavioral responses to stressful life events. We validated this instrument with active-duty and reserve components of military and veterans samples (N = 1,014). The resulting 22-item scale demonstrated sound internal consistency (α = 0.91–0.93) and good test–retest reliability (r = 0.87). Factor analysis suggested 5 protective factors: (a) meaning-making and restoration, (b) active coping, (c) cognitive flexibility, (d) spirituality, and (e) self-efficacy. Associations with other measures supported convergent, discriminant, and concurrent validity. In separate military samples, the RSES accounted for unique variance in post-traumatic stress disorder symptoms above and beyond existing scales measuring resilience-related constructs, thereby demonstrating incremental validity. The RSES provides a brief, reliable, and valid measure of individual differences in cognitive, emotional, and behavioral responses to life’s most stressful events.

INTRODUCTION

Resilience is a multidimensional construct that has been defined in a number of different ways. For example, it has been defined as symptom-free functioning or absence of posttraumatic stress disorder (PTSD) following trauma exposure, achievement despite disadvantage, and “the process of adapting well in the face of adversity, trauma, tragedy, threats, or even significant sources of stress.”

Few psychometric scales have been developed to measure resilience and related constructs. Three such measures include the Dispositional Resilience Scale-15 (DRS-15), the Connor–Davidson Resilience Scale (CD-RISC), and the Resilience Scales for Children and Adolescents (RSCA). The CD-RISC has been used as an outcome measure in interventions shown to enhance resilience, whereas the DRS-15 and Resilience Scales for Children and Adolescents have primarily been used to assess characteristics of resilience (e.g., hardness, coping, self-efficacy). This manuscript describes the development and initial validation of a self-report instrument to evaluate individual differences in cognitive, emotional, and behavioral responses to stressful life events. The Response to Stressful Experiences Scale (RSES) is intended to complement existing measures of resilience by providing a measure that focuses on how an individual characteristically responds during and immediately after life’s most stressful events; by extending dimensions of resilience to include factors such as cognitive flexibility, meaning making, and restoration; and by providing a more comprehensive measure of individual characteristics that may confer protection against the deleterious effects of high magnitude stressors.

In developing the RSES, we followed standards for construct validation and associated instrument development. The initial definition of the construct was followed by elaboration of content domains, item generation, demonstration of measurement consistency or reliability, examination of factor structure, and evaluation of convergent, discriminant, concurrent, and incremental validity. We developed and validated the
scale using multiple samples, including large groups of active-duty and reserve component military personnel with a wide variety of military experiences and degrees of combat exposure, a group of combat veterans seeking Veterans Affairs services, and a small group of active-duty medical corpsmen. In Part 1 of this manuscript, we describe the development of the RSES. Part 2 contains information about item and scale properties, and Part 3 contains information about test–retest reliability. In Part 4, we report the results of analyses to determine the best structure underlying item responses. Finally, in Part 5, we provide evidence of convergent, discriminant, concurrent, and incremental validity.

PART 1: SCALE DEVELOPMENT

Scale development began with a wide-ranging literature review of resilience-related constructs: optimism, personality (e.g., neuroticism, hardiness), religion and spirituality, social support, emotion regulation, self-efficacy, mastery, cognitive flexibility, posttraumatic growth, and coping. Following an iterative process of review, we categorized and defined several content themes and trait-related resilience constructs recurrent in the resilience literature (Table I).

Items were generated to tap these content themes, resulting in a preliminary collection of 62 items. All items were then presented to a working group of experts in PTSD and resilience, who reviewed them for readability, redundancy, and overall content representativeness. The result was an initial draft scale comprising 42 items. Each item is accompanied by a 5-point Likert scale with responses ranging from 0 (not at all like me) to 4 (exactly like me), where higher scores indicate higher levels of protective responses to stressful life events.

PART 2: ITEM AND SCALE CHARACTERISTICS

Participants and Procedure

Data for this phase of instrument construction were obtained from 3 independent military sources: (1) 224 members of a Marine Expeditionary Unit; a self-sustaining, quick-reaction force composed of infantry, artillery, and air combat personnel; logistics specialists; and other combat support components; (2) 446 members of an Army National Guard Infantry Division that included infantry, artillery, cavalry, security, logistical, medical, combat engineer and other combat support personnel; and (3) 200 soldiers assigned to an Army National Guard Combat Aviation Brigade consisting of aviators, air crew, and ground maintenance and support teams for a fleet of gunships and assault and utility helicopters. The first 2 of these groups (224 Marines and 446 National Guard Infantry) provided post-deployment reports of combat experiences as follows: received hostile fire (88%), went on combat patrols or missions (83%), encountered mines or booby traps (59%), witnessed someone from unit being injured or killed (48%), witnessed enemy being injured or killed (43%), fired weapon at the enemy (40%), and personally wounded or injured in combat (12%). For the 200 Combat Aviation Brigade soldiers, data were collected before a major deployment. Their reports of prior stressors indicated that 19% had previous war-zone experience. Furthermore, they had histories of being physically punished (48%), being robbed (38%), exposure to natural disaster (35%), and witnessing an assault or violent death (29%).

The total participants (N = 870) were randomly split into 2 approximately equally sized samples. Sample 1 (n = 431) was used for estimating and appraising initial item and scale characteristics and for item reduction; Sample 2 (n = 439) provided data to confirm final item characteristics and an estimate of internal consistency for the resulting measure. The first 2 columns of Table II contain additional demographic information on these 2 samples.

Responses were collected as part of a larger battery of self-report questionnaires conducted via mail survey or during regularly scheduled meetings attended by all personnel. Participants were informed of the nature of the study, its benefits and risks, and that participation was voluntary; these points were emphasized by both research personnel and military command staff.

Results

Using data from Sample 1, each item’s mean, median, range, and standard deviation (SD) were computed, as was its corrected item-total correlation (the correlation between that item score and total score on all remaining items). These characteristics
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Based on the analysis of Sample 1 data, the 42-item initial draft RSES was trimmed to 22 items. For 20 of the retained items, average item scores ranged from 2.38 to 3.24, and SDs were in the range of 0.70 to 1.10. Though the distributions for these items were negatively skewed, participants tended to use the full range of the response scale for each item. All corrected item-total correlations, again for 20 of the 22 items, exceeded 0.45. The 2 remaining items (“pray or meditate” and “lean on my faith in God or a higher power”) had lower means (1.63 and 2.08, respectively), higher dispersion (1.36 and 1.47, respectively), and lower item-total correlations (0.31 and 0.34, respectively). These items, from the religion and spirituality-content domain, were judged as necessary to accommodate the content validity of the construct and thus were retained.

Table III contains results of analyses of data from Sample 2 for the final 22-item version of the RSES. As shown, item scores averaged from 1.62 to 3.26 and demonstrated acceptable dispersion. Item-total correlations ranged from 0.32 to 0.59. The total RSES score across all Sample 2 participants averaged $M = 60.17$ ($SD = 12.38$). Coefficient $\alpha$ for this 22-item scale was 0.92.

**PART 3: TEST–RETEST RELIABILITY**

The RSES was administered twice to a sample of 19 Navy corpsmen assigned to a U.S. Marine Corps Deployment Health Clinic (Sample 3; see column 3 of Table II). These participants completed the 22-item RSES as a stand-alone scale following regularly scheduled weekly staff meetings. The interval between the first and second administrations was 7 days. Pearson product-moment correlation was computed as the index of stability over time or test–retest reliability.

At Time 1, the mean RSES score was $M = 67.32$ ($SD = 11.00$). At Time 2, the mean RSES score was $M = 70.74$ ($SD = 8.15$). Test–retest reliability was 0.87, suggesting that RSES scores are stable over a brief interval.

**PART 4: FACTOR STRUCTURE OF THE RSES**

For this portion of the study, we used data from Sample 2, active-duty and reserve component personnel (see second column of Table II for demographics); with listwise deletion for missing data, the effective sample size was 412. Preliminary evaluation of the factorability of the correlation matrix via the Kaiser–Meyer–Olkin Measure of Sampling Adequacy yielded a value of 0.92, and Bartlett’s Test of Sphericity produced $\chi^2 (231) = 4191.06, p < 0.001$, both indicating the appropriateness of applying factor analysis to the data. Exploratory factor analysis was then performed with maximum likelihood extraction of 3, 4, 5, 6, and 7 factors, each with Promax.

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**TABLE II. Demographic Characteristics of Samples**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>1 ($n = 431$)</th>
<th>2 ($n = 439$)</th>
<th>3 ($n = 19$)</th>
<th>4* ($n = 402$)</th>
<th>5* ($n = 224$)</th>
<th>6 ($n = 103$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>30.19</td>
<td>30.66</td>
<td>24.93</td>
<td>29.91</td>
<td>23.08</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Median</td>
<td>28.00</td>
<td>27.00</td>
<td>24.00</td>
<td>27.00</td>
<td>22.00</td>
<td>28.00</td>
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<tr>
<td>SD</td>
<td>8.78</td>
<td>9.75</td>
<td>4.17</td>
<td>8.76</td>
<td>3.61</td>
<td>7.30</td>
</tr>
<tr>
<td>Time in Service (Years)</td>
<td>8.39</td>
<td>9.11</td>
<td>4.47</td>
<td>9.68</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>5.75</td>
<td>6.00</td>
<td>2.63</td>
<td>7.00</td>
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<td>6.00</td>
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<td>SD</td>
<td>6.85</td>
<td>7.67</td>
<td>4.10</td>
<td>6.72</td>
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<td>6.41</td>
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<td>Range</td>
<td>0–36</td>
<td>0–37</td>
<td>1–16</td>
<td>0–31</td>
<td>0–16</td>
<td>1–31</td>
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<td>Branch of Service (%)</td>
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<td>Air Force</td>
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<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>3.4</td>
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<tr>
<td>Marines</td>
<td>25.4</td>
<td>25.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
<td>14.4</td>
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<td>Army</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>53.3</td>
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<td>National Guard</td>
<td>74.6</td>
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<td>0.0</td>
<td>100.0</td>
<td>0.0</td>
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<tr>
<td>Navy</td>
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<td>0.7</td>
<td>100.0</td>
<td>0.0</td>
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<td>Gender (%)</td>
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<td>88.6</td>
<td>96.8</td>
<td>87.8</td>
<td>99.8</td>
<td>95.8</td>
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<td>Male</td>
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<tr>
<td>Female</td>
<td>11.5</td>
<td>12.3</td>
<td>3.2</td>
<td>12.2</td>
<td>1.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Ethnicity (%)</td>
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<td></td>
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<tr>
<td>White</td>
<td>85.0</td>
<td>87.5</td>
<td>56.7</td>
<td>93.5</td>
<td>79.9</td>
<td>63.5</td>
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<tr>
<td>African American</td>
<td>4.0</td>
<td>1.3</td>
<td>16.7</td>
<td>1.5</td>
<td>5.8</td>
<td>11.4</td>
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<td>Hispanic</td>
<td>2.7</td>
<td>4.5</td>
<td>10.0</td>
<td>1.2</td>
<td>8.5</td>
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<tr>
<td>Asian American</td>
<td>3.4</td>
<td>2.5</td>
<td>6.7</td>
<td>0.7</td>
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<td>1.8</td>
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<td>Native American</td>
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<td>3.3</td>
<td>0.7</td>
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<tr>
<td>Mixed</td>
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<td>2.7</td>
<td>3.3</td>
<td>1.9</td>
<td>2.2</td>
<td>0.6</td>
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</tbody>
</table>

Percentages that do not total 100% are due to rounding and missing responses. *Sample consisted of subsets of Samples 1 and 2.
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TABLE III. Item Characteristics and Factor Pattern Matrix

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Item-total correlation</th>
<th>Factorsa</th>
<th>Factorsb</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Communality</th>
</tr>
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<tr>
<td>Take Action</td>
<td>3.08</td>
<td>0.81</td>
<td>0.59</td>
<td>0.01</td>
<td>0.84</td>
<td>-0.04</td>
<td>0.03</td>
<td>-0.06</td>
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<td>0.630</td>
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<tr>
<td>Not Give up</td>
<td>3.19</td>
<td>0.79</td>
<td>0.42</td>
<td>-0.28</td>
<td>0.82</td>
<td>0.09</td>
<td>-0.09</td>
<td>-0.01</td>
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<td>0.511</td>
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<tr>
<td>Find Way to Carry on</td>
<td>3.26</td>
<td>0.70</td>
<td>0.46</td>
<td>-0.07</td>
<td>0.62</td>
<td>0.08</td>
<td>-0.04</td>
<td>0.09</td>
<td>0.459</td>
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<tr>
<td>Pray or Meditate</td>
<td>1.62</td>
<td>1.36</td>
<td>0.32</td>
<td>0.08</td>
<td>0.07</td>
<td>-0.00</td>
<td>0.77</td>
<td>-0.08</td>
<td></td>
<td>0.628</td>
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<td>Face My Fears</td>
<td>2.90</td>
<td>0.81</td>
<td>0.50</td>
<td>0.15</td>
<td>0.50</td>
<td>0.00</td>
<td>-0.03</td>
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<td>Find Opportunity for Growth</td>
<td>2.66</td>
<td>0.91</td>
<td>0.59</td>
<td>0.56</td>
<td>0.34</td>
<td>-0.06</td>
<td>-0.06</td>
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<td>0.494</td>
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<td>Calm and Comfort Myself</td>
<td>2.46</td>
<td>0.99</td>
<td>0.57</td>
<td>0.52</td>
<td>-0.10</td>
<td>0.01</td>
<td>0.04</td>
<td>0.05</td>
<td>0.026</td>
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<tr>
<td>Try to “Recharge” Myself</td>
<td>2.58</td>
<td>1.00</td>
<td>0.49</td>
<td>0.59</td>
<td>-0.05</td>
<td>0.02</td>
<td>-0.01</td>
<td>-0.08</td>
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<td>See it as a Challenge</td>
<td>2.58</td>
<td>0.91</td>
<td>0.55</td>
<td>0.57</td>
<td>0.23</td>
<td>-0.06</td>
<td>-0.04</td>
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<td>Look at Problem Number of Ways</td>
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<td>0.85</td>
<td>0.51</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.94</td>
<td>-0.05</td>
<td>-0.08</td>
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<td>Look for Creative Solutions</td>
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<td>0.89</td>
<td>0.52</td>
<td>-0.03</td>
<td>0.16</td>
<td>0.77</td>
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<td>-0.07</td>
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<td>Put Things in Perspective</td>
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<td>0.85</td>
<td>0.51</td>
<td>0.42</td>
<td>-0.14</td>
<td>0.17</td>
<td>0.02</td>
<td>0.24</td>
<td>0.422</td>
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<td>Determine What is Changeable</td>
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<td>0.91</td>
<td>0.52</td>
<td>0.25</td>
<td>0.06</td>
<td>0.25</td>
<td>0.00</td>
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<td>Find Meaning From Experience</td>
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<td>0.92</td>
<td>0.54</td>
<td>0.81</td>
<td>-0.09</td>
<td>0.08</td>
<td>-0.03</td>
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<td>Find Strength in Meaning, Purpose, Mission</td>
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<td>1.02</td>
<td>0.56</td>
<td>0.69</td>
<td>-0.11</td>
<td>0.01</td>
<td>0.14</td>
<td>0.07</td>
<td>0.552</td>
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<td>Know I Will Bounce Back</td>
<td>2.96</td>
<td>0.81</td>
<td>0.55</td>
<td>0.11</td>
<td>-0.09</td>
<td>-0.12</td>
<td>-0.01</td>
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<td>Expect That I can Handle</td>
<td>3.13</td>
<td>0.75</td>
<td>0.44</td>
<td>-0.19</td>
<td>0.27</td>
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<td>-0.03</td>
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<td>Learn Important and Useful Life-Lessons</td>
<td>2.82</td>
<td>0.92</td>
<td>0.57</td>
<td>0.80</td>
<td>0.08</td>
<td>-0.13</td>
<td>-0.02</td>
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<td>0.568</td>
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<td>Understand That Bad Things Can Happen</td>
<td>3.14</td>
<td>0.88</td>
<td>0.49</td>
<td>0.22</td>
<td>0.42</td>
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<td>-0.02</td>
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<td>0.346</td>
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<td>Lean on Faith in God</td>
<td>2.05</td>
<td>1.49</td>
<td>0.37</td>
<td>-0.02</td>
<td>0.00</td>
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<td>Draw Upon Lessons Learned</td>
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<td>0.87</td>
<td>0.53</td>
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<td>Practice Ways to Handle Better</td>
<td>2.39</td>
<td>0.97</td>
<td>0.47</td>
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<td>3.87</td>
<td>2.76</td>
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aFactor 1, meaning-making and restoration; Factor 2, active coping; Factor 3, cognitive flexibility; Factor 4, spirituality; Factor 5, self-efficacy. bAfter rotation.

rotation to facilitate interpretation. The \( \chi^2 \) goodness-of-fit index, root mean square error of approximation (RMSEA), \( BIC \) (Bayesian information criterion), and proportion of variance accounted for by the number of factors extracted were consulted to determine which solution best and most parsimoniously represented the RSES factor structure.

Table IV presents results for the series of exploratory factor analyses. While the change in \( \chi^2 \) value (\( \Delta \chi^2 \)) maps a steady improvement of fit as the number of factors increases, it does not take parsimony into consideration. The RMSEA (a standardized index of misfit per degree of freedom) and BIC (a function of the \( \chi^2 \) statistic, number of cases, and number of parameters in the model) jointly consider goodness of fit and parsimony and are most useful in selecting the model of best fit. Using these 2 indices, both the 5- and 6-factor models are noteworthy. The 5-factor model yields an RMSEA (0.051) that approximates the recommended cut-point of 0.05, and the 6-factor model’s RMSEA (0.041) surpasses this criterion. Values for the BIC closer to zero are preferred; in this case, the smaller the BIC value, the better the model-data fit. BIC values are highest for the 3-factor model, decrease for the 4- and 5-factor models, but then increase again for the 6- and 7-factor models. The BIC is extremely sensitive to parsimony, and the larger number of parameter estimates in the 6- and 7-factor models (as compared to the 5-factor model) inflates its value. In this series of analyses, reference to the BIC (and acceptable value for the RMSEA) encourages endorsement of the 5-factor model. Moreover, the difference in BIC values between the 5- and 6-factor models renders the 5-factor model to be decisively (using the guidelines and language of Jeffreys) or very strongly (using the guidelines and language of Raftery) superior to the 6-factor model, with odds of \( \Delta \chi^2 \geq 10 \) supporting the 5-factor over the 6-factor solution.

Rotation of the 5-factor solution yielded a pattern matrix that successfully recapitulated facets of content that guided construct definition and associated item development. The rightmost columns of Table III present this factor-pattern matrix, the matrix of standardized weights of the regression of item scores on factor scores. To ease interpretation of the solution, values above 0.30 are presented in boldface type. Factor 1 seems to represent the important task of meaning-making and restoration, reflecting perspective-taking, cultivating revitalization, and learning essential lessons from life’s most stressful experiences. Factor 2 appears dominated by...
active coping or engaging in thoughts and behaviors aimed at altering internal or external sources of stress. The higher-loading items in Factor 3 reflect critical thinking, consideration of alternatives, and problem-solving. Factor 4 implies spirituality or belief in a higher power, greater than one’s self, that can guide, shape, and inform experiences. Factor 5 suggests self-efficacy or confidence in one’s ability to ultimately manage and successfully emerge from the stressful situation. These 5 factors (meaning-making and restoration, active coping, cognitive flexibility, spirituality, and self-efficacy) accounted for over 53% of the total variability in item responses. The last column in Table III provides item communalities, and eigenvalues and percentages of variance for each rotated factor are given in the bottom rows of the table.

Table V presents intercorrelations among scores on the 5 factors. These correlations ranged from 0.13 (active coping with spirituality) to 0.72 (meaning-making and restoration with self-efficacy). Consistent with the item selection process (wherein spirituality items were purposefully retained despite slightly lower item-total associations), the weakest correlations were between spirituality and the other facets of content. Using the >0.30 decision for identifying salient items yields 3 factors with few indicators (cognitive flexibility, spirituality, and self-efficacy). The intent of the factor analysis was to verify that selected items adequately sample the content breadth implied by the process of construct definition (Part I) and hence uphold the content validity of the measure.21-23 Importantly, the separate factors, especially those with limited numbers of indicators, are not intended as separate stand-alone subscales, rather use of a total score across the content domains is recommended.

**PART 5: EVIDENCE FOR VALIDITY**

**Participants**
Subsets of Samples 1 and 2 completed measures in addition to the RSES as part of a larger self-report assessment battery. Sample 4 consisted of 402 National Guard service members. Sample 5 consisted of 224 active-duty Marines. In addition, a new sample (column 6, Table II) consisted of 103 veterans of Operations Enduring Freedom and Iraqi Freedom seeking care at the National Center for PTSD within the Veterans Affairs Connecticut Healthcare System. This sample reported the following combat experiences: received hostile fire (93%), went on combat patrols or missions (88%), encountered mines or booby traps (80%), fired weapon at the enemy (65%), witnessed enemy being injured or killed (65%), witnessed someone from unit being injured or killed (61%), and personally wounded or injured in combat (26%).

**Measures**
Additional measures administered to these groups included the following:

- Beck Depression Inventory-II (BDI-II). The BDI-II is a widely used 21-item self-report measure of severity of depressive symptoms. Cronbach’s α for the current sample was 0.92.
- Combat Experiences Scale. This scale from the Deployment Risk and Resilience Inventory (DRRI) assesses exposure to combat situations common to deployments in support of current military operations in Iraq and Afghanistan. Values for Cronbach’s α were 0.81, 0.86, and 0.92 for the 3 samples in this part of the study.
- Connor–Davidson Resilience Scale. The CD-RISC is a 25-item self-report measure of psychological resilience. Respondents rate each item on a Likert scale from 0 (not true at all) to 4 (true nearly all of the time). For the current samples, values for Cronbach’s α were 0.91 and 0.95.
- Dispositional Resilience Scale-15. The DRS-15 is a 15-item self-report measure comprising 3 factors of hardness: Control, e.g., “Planning ahead can help avoid most future problems”; Commitment, e.g., “I really look forward to my work activities”; and Challenge, e.g., “Changes in routine are interesting to me.” Higher scores indicate greater hardness. Cronbach’s α for the total scale was 0.82.
- Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2 RF). An abbreviated version of the MMPI-2 RF Lie “L” scale, which assesses “faking good,” was included for evaluation of discriminant validity. Broad personality dimensions were assessed using abbreviated versions of 2 MMPI-2 Personality Psychopathology Five (PSY-5) scales: the Negative Emotionality/Neuroticism scale (23 items) measured the personality disposition to experience negative emotion such as anxiety, worry, nervousness, and adversarial interactions, and the Introversion/Low Positive Emotionality scale (21 items) measured low capacity to experience pleasure by seeking out and actively engaging with one’s environment. Optimism is the converse of Introversion/Low Positive Emotionality.
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**Table V. Factor Intercorrelations**

<table>
<thead>
<tr>
<th>Meaning-making and Restoration</th>
<th>Active Coping</th>
<th>Cognitive Flexibility</th>
<th>Spirituality</th>
<th>Self-efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning-making and Restoration</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Active Coping</td>
<td>0.68</td>
<td>—</td>
<td>0.65</td>
<td>0.59</td>
</tr>
<tr>
<td>Cognitive Flexibility</td>
<td>0.59</td>
<td>0.68</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Spirituality</td>
<td>0.16</td>
<td>0.13</td>
<td>0.40</td>
<td>—</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.24</td>
<td>0.50</td>
<td>0.63</td>
<td>0.72</td>
</tr>
</tbody>
</table>

**Additional Reading**
- Development and Initial Validation of the Response to Stressful Experiences Scale
- MILITARY MEDICINE, Vol. 176, February 2011
- Downloaded from https://academic.oup.com/milmed/article-abstract/176/2/161/4345344 by guest on 16 January 2019
material assistance or resources). It uses a 5-point Likert response format ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach’s $\alpha$ was 0.85.

PTSD Checklist-Military (PCL-M). The PCL-M, a 17-item self-report scale developed by the National Center for PTSD, measures PTSD symptom severity in reference to stressful military experiences. Items correspond to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, diagnostic criteria. Respondents rate each item on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). For the current samples, Cronbach’s $\alpha$ had values of 0.94, 0.94, and 0.95.

Thought Control Questionnaire (TCQ). The TCQ measures individual differences in cognitive control strategies for unwanted thoughts. The TCQ consists of 30 statements describing various responses to intrusive thoughts. Items are rated on a 4-point Likert scale ranging from 1 (never) to 4 (almost always). Cronbach’s $\alpha$ was 0.78 for the total scale. In the current study, items from the Reappraisal factor were used (e.g., “I try to reinterpret the thought” and “I try a different way of thinking about it”).

Unit Support Scale—DRRI. The Unit Support Scale from the DRRI is a 12-item measure of the extent to which military personnel perceive assistance and encouragement in the war zone from unit leaders and other unit members. It uses a 5-point Likert response format ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach’s $\alpha$ was 0.92.

**Results**

Bivariate correlations were computed between the RSES and the measures described earlier to examine convergent, discriminant, and concurrent validity. We then examined the incremental validity of the RSES in terms of its ability to account for variance in PCL-M scores above and beyond variance accounted for by measures of related constructs (CD-RISC and DRS-15). In these hierarchical regression analyses, scores on the CD-RISC or the DRS-15 were entered in Step 1; RSES scores were entered in Step 2.

**Convergent, Discriminant, and Concurrent Validity**

Correlations between the RSES and other measures are shown in Table VI. Convergent validity of the RSES was best demonstrated by scores on this measure correlating moderately to moderately high (coefficients of 0.61 and 0.81) with scores on the CD-RISC. Interestingly, the correlation between RSES and DRS-15 was only 0.38, indicating that the degree of convergence between these 2 measures is relatively modest, perhaps owing to a more restricted content domain for the DRS-15 (i.e., hardness). Discriminant validity of the RSES was best demonstrated by scores on this measure correlating poorly with measures presumably weakly related to individual differences in responding to highly stressful events, including scores on the Combat Experiences Scale (coefficients of 0.01, −0.18, and 0.02) and MMPI-2 RF Lie Scale (coefficient of 0.19). That is, one would not expect RSES scores to be associated with either the degree of exposure to wartime trauma or a general tendency to dissimulate.

Concurrent validity of the RSES was demonstrated by scores on this measure correlating moderately with measures conceptually associated with adaptive capacities reflecting resilience. That is, those scoring higher on the RSES tended to score higher on measures of Unit Support (coefficient of 0.38) and Postdeployment Social Support (coefficients of 0.36 and 0.56), suggesting that persons who adapt best in the face of adversity and trauma are better able to garner and make use of support from others and their environment than persons who are not as capable of such adaptation. Also, higher scores on the RSES were associated with lower scores on indicators of psychological symptom distress and overall mental health (outcome indicators of resilience): coefficients of $-0.25$, $-0.23$, and $-0.39$ with the PCL-M, −0.35 with PSY-5 neuroticism, and −0.51 with PHQ-9.

**Incremental Criterion Validity**

In Sample 4, adding the RSES in a hierarchical regression model resulted in a significant $R^2$ change $= 0.05$, $F(1, 409) = 21.50$, and $p < 0.001$. These results indicate that the RSES

accounted for 5% of unique variance in PCL-M scores above and beyond the DRS-15. A second hierarchical regression analysis was performed with RSES scores entered first and DRS-15 scores entered in step 2. Adding the DRS-15 scores resulted in nonsignificant $R^2$ change = 0.00, $F(1, 409) = 0.68$, and $p = 0.41$.

In Sample 5, adding RSES scores in a hierarchical regression model resulted in a significant $R^2$ change = 0.02, $F(1, 217) = 4.01$, and $p < 0.05$. These results indicate that the RSES accounted for 2% of unique variance in PCL-M scores above and beyond scores on the CD-RISC. Reversing order of entry with the CD-RISC entered in Step 2 resulted in a nonsignificant $R^2$ change = 0.00, $F(1, 217) = 1.82$, and $p = 0.18$.

In the National Center for PTSD group (Sample 6), adding RSES scores in a hierarchical regression model resulted in a nonsignificant $R^2$ change = 0.00, $F(1, 101)$, $p = 0.46$. Reverse order of entry resulted in a significant $R^2$ change = 0.04, $F(1, 101) = 5.10$, and $p < 0.05$. These results indicate that the CD-RISC accounted for 4% of unique variance in PCL-M scores above and beyond the scores on RSES.

**DISCUSSION**

Our primary aim was to develop a self-report measure of individual differences in cognitive, emotional, and behavioral responses to stressful life events. In doing so, we organized a working group of experts in PTSD and resilience to identify items reflecting characteristics that may enhance adaptation to stressful life events. We then examined the internal consistency and temporal stability of the RSES as well as its factor structure and various aspects of validity in military personnel. The RSES demonstrated excellent internal consistency and test–retest reliability. Factor analysis indicated that the underlying structure of the instrument was best represented by 5 factors: meaning-making and restoration, active coping, cognitive flexibility, spirituality, and self-efficacy. Total scores on the RSES correlated moderately to strongly with the CD-RISC and with constructs closely related to resilience, such as hardness (DRS-15) and social support (e.g., unit support, post-deployment support), which is consistent with previous research.63-35 RSES scores also correlated negatively with measures of PTSD and depressive symptoms (PCL-M and PHQ-9) as well as with maladaptive personality factors (e.g., neuroticism). These results replicate and extend existing research, documenting an inverse association between resilience and psychopathology.63-35,36 Taken together, the results suggest that the RSES is a measure of individual characteristics that confers protection against traumatic stress and related psychopathology or, alternatively, that individuals with greater severity of psychological symptoms may perceive themselves as being less likely to effectively utilize cognitive, emotional, and behavioral responses during and after stressful life events. Prospective studies are needed to evaluate the directionality of the association between scores on the RSES and measures of psychopathology and functioning in stress- and trauma-exposed populations.

The RSES appears to complement existing measures of resilience-related constructs, such as the CD-RISC and DRS-15. Specifically, the RSES accounted for an additional 5% and 2% of unique variance in PTSD symptoms over and above the DRS-15 and CD-RISC in National Guard and Marine samples, respectively. When considering that correlations between the RSES and the DRS-15 and CD-RISC were moderate, these results suggest that the RSES assesses unique aspects of individual differences contributing to resilience. Moreover, the RSES and CD-RISC combined to account for approximately 6% of the variance in PCL-M scores. Although scores on the RSES accounted for only 2% of unique variance in PCL-M scores above and beyond the CD-RISC in the Marine sample, adding the RSES amounted to a 50% increase in explained variance.

To summarize, the RSES provides a measure of individual differences in adaptive capacities that may contribute to the resilience process, focusing on how an individual characteristically responds during and after stressful life events. It also extends the measurement of adaptation in the face of stress to include a broader range of content, including cognitive flexibility, meaning-making, and restoration. Accordingly, the RSES may be useful in assessing traits that help protect against enduring stress and trauma-related psychological and behavioral health problems. A potential application of the RSES is in military training and peacetime stress assessments. For example, evaluations at the small-unit level (i.e., squad and platoon) may help in tailoring training exercises designed to enhance aspects of resilience (e.g., restoration, cognitive flexibility), which may in turn improve military performance. Moreover, the RSES might be used as a tool to inform assessments of individual or unit readiness for training or deployment. The RSES may therefore be applied in research and decision making in military and civilian settings, where a stable indicator of individual differences in response to stressful life events would be useful. It may also be used in clinical settings to identify cognitive, emotional, and behavioral characteristics that an individual uses to cope with stressful life events and as potential targets for intervention.

Although a significant strength of this study is that the validity of the RSES was examined in military samples with well-documented trauma exposure histories, it remains to be determined whether results will generalize to other trauma-exposed populations. Research is needed to evaluate the extent to which scores on the RSES predict other measures of interest in trauma-exposed populations, such as symptom progression, comorbid conditions, and functional and treatment outcomes.

**ACKNOWLEDGMENTS**

This material is the result of work supported with resources and the use of facilities at the Minneapolis VA Medical Center, Minneapolis, MN; VA Connecticut Healthcare System, West Haven, CT; and VA Boston Healthcare System, Boston, MA. This research was supported in part by a grant from the Department of Defense Congressionally Directed Medical Research Program (CDMRP; W81XWH-07-2-003).
APPENDIX A

Instructions: The following statements describe how some individuals may think, feel, or act during and after the most stressful events in life. Please indicate (with a V) how well each of these statements describes you during and after life’s most stressful events.

During and after life’s most stressful events, I tend to...

1. …take action to fix things.
2. …not give up trying to do what’s necessary to carry on.
3. …find a way to do what’s necessary to carry on.
4. …pray or meditate.
5. …face my fears.
6. …find opportunity for growth.
7. …calm and comfort myself.
8. …try to “recharge” myself before I have to face the next challenge.
9. …see it as a challenge that will make me better.
10. …look at the problem in a number of ways.
11. …look for creative solutions to the problem.
12. …put things in perspective and realize I will have times of joy and times of sadness.
13. …be good at determining what situations are changeable and what situations are not.
14. …find meaning from the experience.
15. …find strength in the meaning, purpose, or mission of my life.
16. …know I will bounce back.
17. …expect that I can handle it.
18. …learn important and useful life-lessons.
19. …understand that bad things can happen to anyone, not just me.
20. …lean on my faith in God or a higher power.
21. …draw upon lessons learned from failures and past mistakes.
22. …practice ways to handle it better next time.

Scoring: All items are scored in positive direction on a 5-point Likert scale (0–4), with 4 = “exactly like me” and 0 = “not at all like me.”

REFERENCES


