Active Warfighter Resilience
A Descriptive Analysis

Nikki E. Barczak-Scarboro, PhD1; Wesley R. Cole, PhD2; J.D. DeFreese, PhD3; Barbara L. Fredrickson, PhD4; Adam W. Kiefer, PhD5; MaryBeth Bailar-Heath, PsyD6; Riley J. Burke, DO7; Stephen M. DeLellis, MPAS8; Shawn F. Kane, MD2; James H. Lynch, MD9; Gary E. Means, MD10; Patrick J. Depenbrock, MD11; Jason P. Mihalik, PhD123*

ABSTRACT

Purpose: Our aim in this study was to psychometrically test resilience assessments (Ego Resilience Scale [ER89], Connor-Davidson Resilience Scale [CD-RISC 25], Responses to Stressful Experiences Scale [RSES short-form]) and describe resilience levels in a Special Operations Forces (SOF) combat sample. Methods: Fifty-eight SOF combat Servicemembers either entering SOF (career start; n = 38) or having served multiple years with their SOF organization (mid-career; n = 20) self-reported resilience, mild traumatic brain injury (mTBI) history, and total military service. Results: All resilience metrics demonstrated acceptable internal consistency, but ceiling effects were found for CD-RISC and RSES scores. ER89 scores were moderate on average. ER89 scores were higher in SOF career start than mid-career Servicemembers (ηp² = 0.07) when accounting for the interaction between SOF career stage and total military service (ηp² = 0.07). Discussion: SOF mid-career Servicemembers had similar ER89 resilience scores with more total military service. The SOF career start combat Servicemembers had higher ER89 measured resilience with less total military service only, potentially showing a protective effect of greater service before entering SOF. Conclusion: The ER89 may be a more optimal military resilience metric than the other metrics studied; longitudinal research on SOF combat Servicemember resilience is warranted.

Keywords: ego resilience; US Army; US Air Force; psychometrics; readiness

Introduction

Resilience, an individual’s capacity to equilibrate or adapt affective and behavioral responses to adverse physical or emotional experiences,1 is an increasingly popular topic in military research and training settings.2 Although resilience research with military Servicemember populations increased approximately 10 years ago in conjunction with rising Servicemember suicide rates,3 there is no consensus on resilience measurement.4 The present study aimed to psychometrically assess multiple resilience metrics and describe resilience with respect to stress-related factors in active-duty SOF combat Servicemembers.

One methodological review of resilience scales postulated that the 25-item CD-RISC3 was the most psychometrically sound but concluded that there was still no gold standard. That is, no single psychometric assessment excels in providing criterion, content, and construct validity alongside internal consistency, reproducibility, and floor/ceiling effects.4 Resilience psychometric assessments include the CD-RISC and ER89,5 both of which were created to measure one’s resilience dispositions and tendencies. These metrics have exhibited acceptable6 internal consistency in military7–11 and civilian adult12–13 samples. Because of the relatively taxing military environment, researchers have created a military-based resilience scale, the RSES,14 which explained incremental variance in posttraumatic stress disorder symptoms after controlling for the CD-RISC.

Servicemembers have endorsed high resilience relative to the RSES15 and the CD-RISC16 ceilings in military resilience literature. A notable exception to ceiling effects was a study of Servicemembers deployed to combat settings (i.e., in theater).6 It is possible that military Servicemembers selected their occupation because they were high in resilience, but high scores do not align with the mental health problems seen in active and retired Servicemember samples.15–17 Being mentally healthy (i.e., with low mental illness symptoms, high well-being) is a postulated tertiary component of resilience, and these constructs have been associated across multiple populations.18 This discrepancy between Servicemembers endorsing high resilience, as well as having a prevalence of clinical mental health disorders, reduces the construct validity of those measures. Because resilience is a construct that is so inherently desired in the

*Correspondence to jmihalik@email.unc.edu
1Nikki E. Barczak-Scarboro, ‘Dr Wesley R. Cole, ‘Dr J. D. DeFreese, ‘Dr Adam W. Kiefer, ‘COL (Ret) Shawn F. Kane, and 1Dr Jason P. Mihalik are affiliated with the Matthew Gfeller Center, Department of Exercise and Sport Science, University of North Carolina at Chapel Hill, Chapel Hill, NC. ‘Drs Nikki E. Barczak-Scarboro, J.D. DeFreese, ‘Adam W. Kiefer, and ‘Jason P. Mihalik are affiliated with Human Movement Science, Department of Allied Health Sciences, University of North Carolina at Chapel Hill, Chapel Hill, NC. ‘Dr Barbara L. Fredrickson is affiliated with the Department of Psychology, University of North Carolina at Chapel Hill, Chapel Hill, NC. ‘Dr MaryBeth Bailar-Heath and ‘Maj Riley J. Burke are affiliated with Air Force Special Operations Command, Fort Bragg, NC. ‘LTC (Ret) Stephen M. DeLellis is affiliated with the Fort Bragg Research Institute, The Geneva Foundation, Tacoma, WA. ‘COL Shawn F. Kane is affiliated with the Department of Family Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC. 4’COL (Ret) James H. Lynch is affiliated with Regenerative Orthopedics & Sports Medicine, Annapolis, MD. 5COL Gary E. Means and 5COL Patrick J. Depenbrock are affiliated with United States Army Special Operations Command, Fort Bragg, NC. Note: Dr Barczak-Scarboro is now affiliated with the Henry M. Jackson Foundation for the Advancement of Military Medicine collaborating with the Consortium for Health and Military Performance at the Uniformed Services University Department of Military and Emergency Medicine.
military, metrics may not be performing as well as theorized, in part because of conscious or unconscious social desirability and/or self-serving biases that result in inflated scores. This leaves military resilience research, which has generally used the CD-RISC, in search of a better metric.

The ER89, in contrast, has relatively low face validity (i.e., in which a scale’s items look like the construct they measure). It has been argued that having high face validity may not necessarily inherently indicate optimal measurement, especially when the construct is one that the respondent may or may not wish to possess. This is particularly pertinent for resilience because the capacity to adapt well to stress is integrally necessary for success in the military. The ER89 also demonstrated high content validity—scale items representing the span of the underlying construct—with not only mental health outcomes, but also adaptive biological stress responses that align with the definition of resilience. Specifically, individuals with higher ER89 scores recovered faster from visual and physiological stressors. Further, ER89 scores have been moderate, on average, across SOF combat Servicemembers. With this, the ER89 may be a more optimal resilience metric for military populations, but no study has investigated these resilience metrics concurrently. Therefore, our first aim was to psychologically assess the ER89, CD-RISC, and RSES head-to-head in SOF combat Servicemembers.

As mentioned, the ER89, CD-RISC, and RSES were generally designed to measure dispositional resilience, which most foundational research in this area considered it to be. With this understanding, resilience is conceptualized as a set of adaptive traits that an individual tends to display across contexts. In line with stress theory, researchers have since combined intra-personal and environmental factors to best conceptualize resilience as a dynamic coping process that involves state and trait factors. State factors are transient and based on the momentary context, including factors such as one’s available resources. Trait factors are generally stable across contexts and include a person’s protective personality traits. State and trait factors combine when coping with a stressor, and their interaction results in various behavioral and affective responses. This process is iterative—fluenced by past experiences—and, therefore, individual resilience should be measured as trajectories over time. There is potential growth in learning from past experiences, known as posttraumatic growth, but there are also factors that can lead to decreased resilience.

In the military context, with continual exposure to stress (i.e., training, deployment, injury), the consistent resource depletion may accumulate into actual resilience decrements. Following stressor exposure, resilience may be impaired if the individual does not have time to process information or recover following adaptation, which may lead to decay in one’s resilience. This agrees with more recent resilience research, which argues that an individual cannot respond resiliently when their resources are depleted, making them vulnerable to stressors. This vulnerability can occur when the system is impaired and especially when the adversity is prolonged. Indeed, SOF medical researchers acknowledge that “[e]ven the most resilient—those who can withstand the most hardship for the longest periods—have a breaking point.” Therefore, combat Servicemembers’ resilience could decay from years of SOF service involving continually stressful combat and combat-related training. In the absence of multiyear longitudinal data in this population, there does not exist a strong foundation upon which studying the effect of career occupational exposures may be shown to affect short- and long-term resilience among SOF combat Servicemembers.

A compounding stressor to that of SOF combat service is mild traumatic brain injury (MTBI), which occurs at a relatively high prevalence in active Servicemembers compared with the civilian population. Veterans reported lower trait resilience with a higher prevalence of MTBI history, indicating that sustaining more of these injuries may also impair resilience. For that reason, controlling for MTBI history should highlight the effects of SOF service. Although mid-career SOF combat Servicemembers have had longer SOF careers, this is not a clear indication of total military service (e.g., some Servicemembers may join SOF later in their military careers), and it is important to control for it in the present study to ensure that differences in SOF career stage are preliminary evidence of SOF service effects.

Based on the lack of measurement consensus and SOF resilience description, the present study had two aims: (1) to psychometrically assess three resilience metrics in active SOF combat Servicemembers via central tendency and dispersion, reliability, and content validity, and (2) to differentiate resilience between SOF career stages in combat Servicemembers while accounting for total military service and MTBI history. We hypothesized that all metrics would demonstrate acceptable internal consistency but that the RSES and CD-RISC would show ceiling effects. We also hypothesized that the metrics would relate negatively to mental illness symptoms and positively to subjective well-being. We further hypothesized that SOF career start combat Servicemembers would endorse higher resilience than their mid-career colleagues who have been through more specialized military stress exposure. Finally, we predicted that the ER89 and CD-RISC would be sufficiently sensitive to detect differences in resilience between SOF career stages, even when controlling for MTBI and total military service.

Methods

Participants

Active SOF combat Servicemembers (age, 33.1 ± 4.5 years; all males) were assigned to the United States Special Operations Command (USSOCOM). These combat Servicemembers are affiliated with either the United Stated Army Special Operations Command (USASOC) or the Air Force Special Operations Command (AFSOC). Fifty-eight SOF combat Servicemembers completed the psychometric battery, either when entering SOF (career start; n = 38) or after multiple years with their SOF organization (mid-career; n = 20). Thirty-seven combat Servicemembers were in the USASOC (63.8%; n = 17 SOF career start; n = 20 SOF mid-career) and 21 in the AFSOC (36.2%; n = 21 SOF career start). Thirty-three SOF combat Servicemembers reported no lifetime clinician-confirmed MTBI history (56.9%); those with a MTBI history reported one to six TBIs. There was no difference in MTBI history between career stages (χ²(1) = 0.03; p = .9). The SOF career start combat Servicemembers tended to be 6.5 years (SE = 0.9) younger than mid-career combat Servicemembers, which was statistically different (t₁₇ = −7.07; p < .01). For this reason, age was controlled for in preliminary analyses. On average, SOF combat Servicemembers have spent approximately 12.6 years in active military service. The SOF career start combat Servicemembers served an average of 10.3 years (range, 3.8 to 27.7 years) and mid-career, an average of 16.9 years (range, 9.6 to...
25.5 years) in the military; this was statistically different ($t_{56} = -5.53; p < .01$).

**Procedures**
American Psychological Association ethical standards were adhered to in the present study. All study participants provided verbal consent prior to testing, and the entire study protocol was approved by the Office of Human Research Ethics at the University of North Carolina at Chapel Hill and by the Human Research Protection Office at the US Army Medical Research and Development Command (USAMRDC). The SOF combat Servicemembers participated in a testing session that took place in a university-based mTBI clinical research center. During that time, each combat Servicemember completed computer-based assessments, prompting them to self-report demographic information. Using the same online platform, participants completed all psychometric assessments.

**Measures**
Participants self-reported whether they had ever experienced a clinician-confirmed mTBI at any point in their lifetime, the number of mTBIs (ranging from 0 to 10), and the recency of the last injury. For the current project, we used a total of lifetime mTBIs, which has been used in previous SOF research. Each SOF combat Servicemember self-reported their date of birth, which was used to calculate age (in years) from their testing date. Participants also reported their date of enlistment or date of commission; total military service was calculated as the difference between the enlistment or commission date and testing date (in years). Study personnel recorded SOF career materials and analysis code for this study are not available.

**Results**

**Psychometric Assessment and Description**
The CD-RISC (skewness = -0.61; $W = 0.95; p = .014$) and RSES (skewness = -1.30; $W = 0.72; p < .001$) were both negatively skewed and exhibited non-normal distributions. Medians and interquartile ranges are reported. All resilience metrics exhibited acceptable internal consistency (RSES $\alpha = 0.71$; CD-RISC $\alpha = 0.85$; ER89 $\alpha = 0.77$). Across subjects, SOF combat Servicemembers reported moderate resilience, as indexed by the ER89 (mean $= 46.21 \pm 5.03$ out of 56), as well as high resilience, as indexed by the CD-RISC (median $= 88.5$; interquartile range [IQR] $= 11$ out of 100) and the RSES (median $= 16$; IQR $= 2$ out of 16) relative to response options. Twenty-seven SOF combat Servicemembers (46.55%) showed a normal distribution, and therefore, multivariable regression analyses were used. Two separate Poisson regression analyses were used for the CD-RISC and RSES because these were both discrete and negatively skewed. Because of graphical representation of study variables, the interaction between SOF career stage and total military service was also probed. Post hoc contrast analyses for low, median, and high resilience used quartile ranges per resilience metric. The criterion for statistical significance was set a priori at 0.05. All data were analyzed using SAS statistical software (version 9.4; SAS Institute). Materials and analysis code for this study are not available.

**TABLE 1** Study Resilience Psychometrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Scale</th>
<th>Items</th>
<th>Example Items</th>
<th>Scoring$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ego Resiliency Scale (ER89) (Block &amp; Kremen, 1996)</td>
<td>1 – Does Not Apply at All</td>
<td>14</td>
<td>• I enjoy dealing with new and unusual situations.</td>
<td>Aggregate (14–56)</td>
</tr>
<tr>
<td></td>
<td>2 – Applies Slightly</td>
<td></td>
<td>• I get over my anger at someone reasonably quickly.</td>
<td>Higher score = higher resilience</td>
</tr>
<tr>
<td></td>
<td>3 – Applies Somewhat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 – Applies Very Strongly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connor Davidson Resilience Scale (CD-RISC) (Connor &amp; Davidson, 2003)</td>
<td>0 – Not True at All</td>
<td>25</td>
<td>• Under pressure, I stay focused and think clearly.</td>
<td>Aggregate (0–100)</td>
</tr>
<tr>
<td></td>
<td>1 – Rarely True</td>
<td></td>
<td>• Having to cope with stress makes me stronger.</td>
<td>Higher score = higher resilience</td>
</tr>
<tr>
<td></td>
<td>2 – Sometimes True</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 – Often True</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 – True Nearly All the Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Stressful Experiences Scale (RSES) – Brief (De La Rosa et al., 2016)</td>
<td>0 – Not at All Like Me</td>
<td>4</td>
<td>• During and after life’s most stressful events, I tend to find a way to do what’s necessary to carry on.</td>
<td>Aggregate (0–16)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>• During and after life’s most stressful events, I tend to learn important and useful life lessons.</td>
<td>Higher score = higher resilience</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 – Exactly Like Me</td>
<td></td>
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</tbody>
</table>

$^a$possible range reported in parentheses
endorsed in the top 10% possible CD-RISC scores, and 35 (60.34%) endorsed the highest possible RSES score, indicating ceiling effects. Resilience central tendency and dispersion calculations for each SOF career stage group can be found in Table 2. In regard to content validity, the ER89 and CD-RISC scores were significantly related to subjective well-being and not to depressive, anxiety, or posttraumatic stress symptoms. The RSES was significantly related to all mental health symptoms. Correlations between resilience and mental health symptoms can be found in Table 2.

**SOF Career Stage Differences**

In preliminary SOF career stage difference models, age did not individually associate with ER89 (t_{52} = 0.93; p = .357), CD-RISC [χ^2(1) = 0.03; p = .870], or RSES scores [χ^2(1) = 1.39; p = .239] and was therefore dropped from all subsequent models.

**ER89**

In a univariate model, there were significant SOF career stage ER89 differences (t_{52} = -2.51; p = .015). However, there were no significant SOF career stage differences in ER89 scores when accounting for total military service and mTBI history (t_{52} = -1.71; p = .094). Total military service (t_{52} = 0.82; p = .415) and mTBI history (t_{52} = -1.09; p = .282) showed nonsignificant main effects. Then, the interaction effect between career stage and total military service was added. The interaction effect was significant (t_{52} = -2.04; p = .047), indicating that SOF career stage differences were a function of total military service (see Table 3). Partial variance accounted for by career stage (η^2 = .11) and the interaction effects (η^2 = .07) exhibited medium-to-large effect sizes.\textsuperscript{15} Post hoc contrasts revealed that SOF mid-career combat Servicemembers with low (t_{48} = -2.27; p = .028) and moderate (t_{48} = -2.31; p = .025) total

<table>
<thead>
<tr>
<th>Resilience Metric</th>
<th>Overall</th>
<th>SOF Career Start</th>
<th>SOF Mid-Career</th>
<th>Subjective Well-being</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Posttraumatic Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>46.21 (5.03)</td>
<td>47.02 (4.41)</td>
<td>44.65 (5.83)</td>
<td>0.42**</td>
<td>-0.12</td>
<td>-0.15</td>
<td>-0.17</td>
</tr>
<tr>
<td>Range</td>
<td>34–54</td>
<td>37–54</td>
<td>34–54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metric Ceiling</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD-RISC</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mean (IQR)</td>
<td>88.5 (11)</td>
<td>87.5 (15)</td>
<td>90 (9.5)</td>
<td>0.29*</td>
<td>-0.20</td>
<td>-0.18</td>
<td>-0.12</td>
</tr>
<tr>
<td>Range</td>
<td>66–100</td>
<td>66–100</td>
<td>73–98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metric Ceiling</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSES</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (IQR)</td>
<td>16 (2)</td>
<td>16 (1)</td>
<td>15.5 (2)</td>
<td>0.56**</td>
<td>-0.47**</td>
<td>-0.33**</td>
<td>-0.37**</td>
</tr>
<tr>
<td>Range</td>
<td>11–16</td>
<td>11–16</td>
<td>12–16</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Metric Ceiling</td>
<td>16</td>
<td>16</td>
<td>16</td>
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</tr>
</tbody>
</table>

**CD-RISC**, 25-item Connor Davidson Resilience Scale; **ER89**, Ego Resiliency Scale; **RSES**, Short Form Response to Stressful Experiences Scale; **SOF**, Special Operations Forces.

Means and standard deviations are reported for the ER89, but medians and interquartile ranges are reported for the CD-RISC and RSES. Pearson correlations were used to assess the relationship with mental health variables for the ER89. Spearman correlations were used for the CD-RISC and RSES.

*p < .05, **p < .001.

<table>
<thead>
<tr>
<th>Resilience Metric</th>
<th>Parameter</th>
<th>Main Effects</th>
<th>SOF Career Stage and Total Military Service Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER89</td>
<td>Intercept</td>
<td>46.04 (3.15)**</td>
<td>47.87 (2.20)**</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage</td>
<td>-2.96 (1.71)</td>
<td>-12.63 (3.04)**</td>
</tr>
<tr>
<td></td>
<td>Total Military Service</td>
<td>3.60 (4.39)</td>
<td>-1.83 (3.03)</td>
</tr>
<tr>
<td></td>
<td>mTBI History</td>
<td>-0.50 (0.46)</td>
<td>-0.31 (0.46)</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage*Total Military Service</td>
<td>17.73 (1.03)**</td>
<td></td>
</tr>
<tr>
<td>CD-RISC</td>
<td>Intercept</td>
<td>4.52 (0.06)**</td>
<td>4.51 (0.10)**</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage</td>
<td>0.08 (0.04)*</td>
<td>0.08 (0.13)</td>
</tr>
<tr>
<td></td>
<td>Total Military Service</td>
<td>0.17 (0.09)*</td>
<td>0.17 (0.11)</td>
</tr>
<tr>
<td></td>
<td>mTBI History</td>
<td>0.01 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage*Total Military Service</td>
<td>0.01 (0.18)</td>
<td></td>
</tr>
<tr>
<td>RSES</td>
<td>Intercept</td>
<td>2.71 (0.06)**</td>
<td>2.69 (0.10)**</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage</td>
<td>-0.02 (0.03)</td>
<td>0.09 (0.10)</td>
</tr>
<tr>
<td></td>
<td>Total Military Service</td>
<td>0.01 (0.09)</td>
<td>0.05 (0.10)</td>
</tr>
<tr>
<td></td>
<td>mTBI History</td>
<td>0.01 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td></td>
<td>SOF Career Stage*Total Military Service</td>
<td>-0.21 (0.18)</td>
<td></td>
</tr>
</tbody>
</table>

CD-RISC, 25-item Connor Davidson Resilience Scale; **ER89**, Ego Resiliency Scale; **RSES**, Short Form Response to Stressful Experiences Scale; **SOF**, Special Operations Forces.

General linear models were used for the ER89. Poisson regression analyses were used for the CD-RISC and RSES.

*p < .10, *p < .05, **p < .001.
military service tended to report lower ER89 scores than did career start Servicemembers, but ER89 scores between career stages were not significantly different from high total military service ($t_{48} = 0.69; p = .494$). This interaction is graphically depicted in Figure 1.

**FIGURE 1** ER89 scores between career stages when accounting for total military service.

![Graph showing ER89 scores between career stages](image)

**CD-RISC**

Career start SOF Servicemembers reported lower CD-RISC scores than did mid-career Servicemembers [$χ^2(1) = 4.60; p = .03$; Figure 2], This effect was small, as SOF mid-career combat Servicemembers reported CD-RISC scores approximately 8% higher than those of career start colleagues. Total military service [$χ^2(1) = 3.66; p = .06$] and mTBI history [$χ^2(1) = 0.36; p = .55$] had nonsignificant main effects (Table 3).

**RSES**

SOF career start and mid-career Servicemembers did not significantly differ in RSES resilience scores [$χ^2(1) = 0.49; p = .48$], and neither total military service [$χ^2(1) = 0.01; p = .919$] nor mTBI history [$χ^2(1) = 1.26; p = .262$] showed significant main effects. Career start and mid-career SOF combat Servicemembers remained similar even when accounting for total military service and mTBI history (see Table 3).

**Discussion**

The three resilience scales tested in our study were internally consistent, in that scale items were related to the scale as a whole. This is considered a measure of psychometric reliability. The ER89 did not demonstrate ceiling effects; across SOF combat Servicemembers, ER89 scores were moderate, whereas CD-RISC and RSES scores were high relative to possible metric ranges, with the RSES showing little variability to warrant the metric’s use. Monitoring overreporting is particularly pertinent for resilience because the capacity to adapt well to stress is inherently desired in the military. The SOF combat Servicemembers endorsed different central tendencies for CD-RISC and ER89 scores despite these metrics claiming to measure the same construct; further construct validity (e.g., physiological stress responses and/or objective performance) of both these metrics may need to be evaluated.

We observed hypothesized positive relationships between the scores on the ER89 and CD-RISC with subjective well-being, with supports partial content validation the small, nonsignificant relationships between the ER89 and CD-RISC with mental illness symptoms did not support content validation of these metrics, which was opposite to our hypothesis. Because the definition of resilience is one’s stress-response capacity, it may be that the amount of stress that SOF combat Servicemembers endure requires all of one’s resilience. Perhaps SOF combat Servicemembers prioritize maintaining operational performance above mental health. Future research should consider objective personal and team performance measures to test this. It also may be that resilience and negative mental health symptoms do not demonstrate as strong a relationship as previously hypothesized in this specific population.

We also aimed to capture preliminary evidence regarding dynamic resilience change via differences between combat Servicemembers entering SOF and those who had been in SOF service for years, with stronger effects found for the ER89. Based on stress theory and recovery science, it could be postulated that SOF mid-career combat Servicemembers would endorse lower resilience scores than career start Servicemembers because of greater combat training and operations exposure. Counter evidence was found with the CD-RISC, despite its ceiling effects, with a small effect size. Partial evidence supported the decay hypothesis as mid-career SOF combat Servicemembers reported lower ER89 scores than their career start counterparts, but only when low in total military service (Figure 1). This effect demonstrated a medium effect size. The SOF mid-career combat Servicemembers with lower total military service reported the lowest resilience. Perhaps entering SOF service without extensive previous military service is a risk factor for suboptimal resilience. Longitudinal resilience studies in SOF combat Servicemembers through their SOF careers are necessary to elucidate the intricacies of these relationships over time.

An unhypothesized positive linear relationship between total military service and ER89 scores was observed only in SOF mid-career combat Servicemembers which indicates that that more military experience (including SOF service) could be beneficial for one’s resilience. Recently, researchers have begun investigating whether one can build resilience through the iterative process of successful stressor adaptation (i.e., engaging in coping responses that aid performance and/or
Increased resilience over time reflects the capacity to learn from previous adaptation to various other stressors or to adapt more efficiently (physiologically and/or affectively). Thus, our results may reflect that maintaining active combat service is associated with resilience growth, partially because of sustaining sufficient recovery after both training and combat operations. Conducting longitudinal observational studies on SOF combat Servicemembers may identify aspects of military training and experiences that facilitate and/or inhibit resilience. This information would directly inform future resilience interventions that have shown limited effectiveness in the current literature.²⁸

Although researchers have found statistically significant negative relationships between mTBI history and trait resilience in veterans,²⁷ the present study failed to reject null hypotheses regarding mTBI history effects. Discrepancies between our results and prior work may be the result of the limited range of histories reported (zero to six mTBIs) in the present study. It should be noted that we used a retrospective self-reported measure of one’s lifetime mTBIs. Though self-report mTBI history measurement may have been a limitation, it has been noted that self-reported recall of mTBI history is reliable and particularly useful when medical records cannot be accessed.²⁷ All other study variables were also self-reported and subjective measures. The greatest threats to validity in our study fall under information or observation biases, with measurement error being the greatest potential threat. In addition to potentially inflated CD-RISC and RSES scores, reported negative mental health symptoms were near the metrics’ floors and related to very high RSES scores, indicative of a strong desirability effect. This points to the need for resilience measurements beyond self-report, whether biological (e.g., stress reactivity, blood hormone levels), behavioral (e.g., days of missed work), or other (e.g., peers, superiors, spouses), that are used to index these constructs. These recall and social desirability biases can be mitigated by creating a quiet testing space to optimize recall and by reminding participants that their responses were confidential, in that their colleagues and superiors will not have access to all of their responses. In line with American Psychological Association best practices,²⁴ we employed only valid and reliable psychometric assessments and ensured participant confidentiality.

**Limitations**

There were other limitations to this study’s methods. We were unable to account for all potentially influential factors, such as environmental (i.e., heat or cold) and personal (i.e., training, sleep) factors that can contribute to Servicemember readiness and resilience.²⁴ The present study also used a cross-sectional design to infer long-term resilience change in SOF combat Servicemembers. Our study aimed to describe information necessary to guide future surveillance studies, which we acknowledge would also benefit from a broader inclusion of Special Operations Forces across all US military Servicemembers beyond the convenience sample of Army and Air Force SOF Servicemembers. Future studies using a longitudinal design should employ more appropriate statistical analyses, such as linear mixed-effect models, to account for the latent heterogeneity between Servicemembers because not all factors can feasibly be controlled or accounted for. Finally, the prevailing COVID-19 pandemic limited access to study participants, rendering a small sample size for our study, especially for SOF mid-career Servicemembers (n = 20). Small sample sizes can increase the possibility of type II error in findings. We do not believe this to be the case, based on the medium effect size. However, replicating our findings with a larger sample size would confirm these relationships.

**Conclusion**

The present study is the first, to our knowledge, to look exclusively at SOF combat Servicemember resilience. Researching resilience can help scientists and stakeholders gain foundational understanding about SOF combat Servicemember stress adaptation, but little is known about measuring or describing this construct in this population. The SOF combat Servicemembers’ ER89 scores were moderate, on average, and this metric displayed preliminary evidence that it is sufficiently sensitive to detect resilience differences when accounting for mTBI history and total military service. Future research regarding the differences in SOF combat Servicemember resilience dynamics with military service (i.e., evaluating psychological, physiological, and performance resilience dynamics based on operational environments) more granularly over time is warranted.

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**Disclaimer**

The views, opinions and/or findings contained in this report are those of the authors and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

**Disclosure**

Coauthors Bailar-Heath and Burke were employed by Air Force Special Operations Command for the study period. Authors DeLellis, Depenbrock, Kane, Lynch, and Means were employed by USASOC for part or all of the study period.

**References**


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