Development and Initial Validation of the Mount Sinai Resilience Scale

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Abstract

Objective: The construct of psychological resilience has received increasing attention in the mental health field. This article describes the development and initial validation of a novel self-report resilience scale, which addresses gaps in the resilience measurement literature by assessing thoughts and behaviors that help promote resilience rather than traits, and simultaneously evaluating multiple factors previously associated with resilience.

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Method: Following consensus meetings focused on scale development, we conducted an online study (n = 1,864) of U.S. adults to develop and validate an initial version of the *Mount Sinai Resilience Scale (MSRS)*.

Results: An exploratory factor analysis in a random 50% of the sample suggested a seven-factor solution; this solution was then generally supported by a follow-up confirmatory factor analysis in the remaining 50% of the sample. After removing poor-fitting items, a revised 24-item scale correlated in the expected directions with established measures of perceived resilience and resilience-related constructs (e.g., social support and optimism).

Conclusions: Collectively, the results of this study provide initial support for the convergent and discriminant validity of the MSRS and describe its factor structure.

Resilience is an important yet often misunderstood topic in trauma and mental health research. Resilience researchers vary with respect to treating it as a trait, process, or outcome (Southwick et al., 2014). It has been defined as the ability to resist distress, "bounce back," adapt, recover, and even thrive or grow from or following adversity (Carver, 1998; Connor & Davidson, 2003; Southwick & Charney, 2012). To maximize the clinical utility of this concept, it is essential to understand and quantify the many processes by which people are resilient so that this can be taught or harnessed. We argue that this process-oriented approach is generally lacking in commonly utilized psychological resilience scales. We acknowledge that there are multilevel models of resilience, such as the socioecological model (Ungar, 2013), which importantly consider the interactions between individual resources and the environment (e.g., community or family); however, we focus here primarily on personal psychological resources. Thus, in this article, we describe efforts to develop and initially validate a novel self-report measure of human resilience that focuses on mutable psychological factors linked to adaptive coping in the face of stress and adversity.

The arguable "gold-standard" psychological resilience scale is the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), which has well-validated 25, 10, and two-item versions (Campbell-Sills & Stein, 2007; Vaishnavi et al., 2007). Supporting its popularity, Connor and Davidson's (2003) measure development paper has been cited over 10,000 times according to a September 2022 Google Scholar search. The CD-RISC scale largely contains self-evaluations (e.g., "I tend to bounce back from adversity") together with some behaviors, and participants rate the extent to which these characteristics have applied to them over the prior month. In validating the scale, the authors chose existing literature, including the work of Michael Rutter (1985), which focused on childhood psychopathology and Suzanne Kobasa's (1979) study of corporate executives. They also drew from anecdotes regarding the hardiness of Antarctic explorer Sir Edward Shackleton and his 1912 expedition. Overall, the CD-RISC assesses the construct of resilience largely as a trait akin to a personality disposition, similar to hardiness (Funk, 1992; Kobasa, 1979) or grit (Duckworth et al., 2007).

There are several limitations to resilience as evaluated by the CD-RISC. First, multiple studies have used the CD-RISC as a predictor of treatment response in psychotherapy studies (e.g., Davidson et al., 2012) and examined its relationship with other clinical and personality scales (e.g., Chang et al., 2023; Köhne et al., 2023). While this was done in the initial validation study (Connor & Davidson, 2003), the CD-RISC appears to be less commonly used as an outcome measure in psychoeducational (nonclinical) or psychotherapeutic (clinical) interventions. Evaluating resilience based on a collection of more specific thoughts, behaviors and feelings, many of which are directly targeted by psychotherapies, may be more useful for clinical applications. Further, treating resilience as a unitary construct by collapsing items into a single total score may lead to overlooking the contributions of distinct factors to the adaptation to stress and recovery from traumatic events. While the original CD-RISC validation paper (Connor & Davidson, 2003) derived five factors, the unique contributions of each factor are not typically examined. Overall, we argue that our approach may provide more granularity and evaluate a broader range of domains with respect to the process of resilience than existing scales.

Unfortunately, several recent large-scale disasters have provided opportunities to study human resilience over the past two decades, providing insights into what people do to cope when confronted with life-threatening situations. For example, social support and optimism have been associated with greater mental health and well-being among U.S. combat veterans, 9/11 responders and survivors, and COVID-19 frontline healthcare workers (Adams et al., 2019; Feingold et al., 2021; Jacobson et al., 2018; Pietrzak et al., 2014; Southwick et al., 2016). Further, the work of Bonanno and others has established a key role for emotional and cognitive flexibility in adapting to traumatic events (Galatzer-Levy et al., 2012; Sardella et al., 2021); and finding meaning in traumatic events has been linked to recovery from traumatic stress-related conditions (Feingold et al., 2022). All these factors have well-validated standalone scales with varying instruction prompts and response options, making direct comparisons of resilience-promoting factors challenging; thus, having a single scale that assesses many aspects of resilience simultaneously may ease comparisons within and across studies and samples.

In the present measure development study, following item selection, we proceeded to exploratory and confirmatory factor analyses (CFAs). We examined convergent validity with respect to the CD-RISC and other resilience-related measures (e.g., social support, optimism, purpose in life, and religion and spirituality) and discriminant validity using a measure of traumatic stress exposure, which was selected due to the finding that the number of exposures alone is often not significantly correlated with resilience or psychiatric symptoms (Meyer et al., 2012).

Method

Scale Development

The scale was drafted over the course of several meetings among the authors (Jonathan M. DePierro, Dennis S. Charney, and Steven M. Southwick) in early 2022; it was then circulated for several additional rounds of feedback by coauthors with expertise in trauma, PTSD, and resilience research (Robert H. Pietrzak, James W. Murrough, Craig L. Katz,

and Adriana Feder). The research group reviewed recent literature, including on coping during the COVID-19 pandemic, to update and extend factors previously associated with resilience (see Iacoviello & Charney, 2014; Southwick et al., 2023). *Altruism* was included because of evidence for its relationship to emotional well-being in longitudinal studies (Kahana et al., 2013; Piliavin & Siegl, 2007). Cross-sectional and longitudinal studies have supported the protective role of *spirituality* and a sense of *meaning/purpose* (Chiang et al., 2021; Fischer et al., 2023; Sharma et al., 2017), *physical exercise* (Bragina & Voelcker-Rehage, 2018; Kim, 2022), *optimism* (Rand et al., 2020; Scheier et al., 1994), and *facing fears* (vs. avoiding them; Iacoviello & Charney, 2014). *Social support* may lower the risk for psychopathology in trauma-exposed samples followed longitudinally (Jacobson et al., 2018) though there is evidence that this relationship is often bidirectional (Wang et al., 2021); relatedly, engaging with a *role model* has also been associated with health benefits (Southwick et al., 2007; Yancey et al., 2011). Considering the broad literature on flexibility (e.g., Galatzer-Levy et al., 2012; Sardella et al., 2021), we created separate item sets for *cognitive* and *emotional flexibility,* respectively. *Brain fitness* (e.g., curiosity) and having a *moral compass*, respectively, have been subject to less research (Nichter et al., 2020; Stephens & Layne, 2023) though often emerge in personal narratives of resilient people (Southwick et al., 2023). We then developed three items for each of these 12 domains.

The scale instructions ask respondents to rate how often they engaged in each of the 36 listed behaviors/strategies to cope with a stressful event in the past month. For items affirmatively endorsed with any frequency other than 0, they receive a follow-up prompt to indicate how helpful or effective it has been for them. Thus, participants complete up to 72 ratings. All ratings are provided on 5-point Likert-type scales (item range 0–4). The MSRS as constructed then yields subscale and full-scale scores for frequency and efficacy, and a total score.

Participants

Participant recruitment and payment were via the Amazon MTurk platform, which is widely utilized for behavioral sciences research (Aguinis et al., 2021; Paolacci et al., 2010). Of 2,088 individuals who attempted the survey, 1,988 (95%) completed it. We excluded 97 individuals who did not pass a recommended basic attention check (Kung et al., 2018) comprised a math word problem (Duarte et al., 2021), leaving a total analytic sample of N = 1,864. The study was granted exempt status by the Mount Sinai Program for Protection of Human Subjects (STUDY-21-01882); all participants reviewed a study information sheet prior to participation. Participants were compensated $5 for completing the study.

Procedure

Participants were invited to participate in a survey on "Coping with Stressful Events" on Amazon MTurk, restricted to users within the United States using native filters in that platform. After reviewing a description of the study, participants could decide to participate in the survey, which was implemented in Research Electronic Data Capture (REDCap; Harris et al., 2009, 2019). Participants completed the MSRS and additional measures of resilience, trauma exposure, coping, and psychiatric symptoms in a fixed order, with

demographic items presented last. The present analyses will focus only on the measures described in the next section.

Measures

MSRS: The MSRS includes 12 domains of emotions, thoughts, and behaviors linked to resilience. Each domain has three items rated for frequency on a Likert-type scale ("0/*not at all true*" to "4/*true nearly all the time*"); for any frequency rating greater than 0, participants are prompted with a follow-up item to assess effectiveness of a given strategy/behavior ("0/*not at all*" to "4/*very*"). This approach was facilitated using native routing features in the survey platform. Any item with a frequency rating of 0 is automatically coded with an effectiveness score of 0. Total frequency and efficacy ratings for the full 36-item scale could range from 0 to 144, respectively, with higher scores taken to indicate greater resilience. We focus on validating the frequency items in the present article, which are the "parent" items used to assess efficacy ratings.

***CD-RISC* (Connor & Davidson, 2003):** The CD-RISC is a widely utilized 25-item self-report measure of psychological resilience. Higher scores indicate higher levels of resilience. The CD-RISC demonstrated excellent internal consistency in the present study (α = .95).

***Purpose in Life Test-Short Form* (PIL-SF; Schulenberg et al., 2011):** The PIL-SF is a four-item global meaning measure that asks respondents to rate the presence of life goals, their sense of life being meaningful, the extent to which they believe their life goals have been achieved, and their sense of life purpose. Scores range from 4 to 28 with higher scores indicating higher levels of global meaning. Internal consistency was good (α = .85).

Medical Outcomes Study Social Support Scale-5: A modified version of the MOS-5 was used to assess perceived social support (Amstadter et al., 2010; Sherbourne & Stewart, 1991). We also utilized a recently adapted version of the MOS-5 to assess the provision of social support to others (Na et al., 2022). For both the original MOS-5 and provision of support scale, scores range from 0 to 25, with higher scores indicating more support. Internal consistency for these scales was good (MOS-5: α= .84; MOS-5-Provision: α= .82).

***Life Orientation Test-Revised* (LOT-R):** The LOT-R (Scheier et al., 1994) was used to evaluate dispositional optimism. Responses are on a 5-point Likert-type scale with higher scores indicating greater optimism. Internal consistency was acceptable (α = .79).

Spiritual/existential struggle: We utilized two items reflecting spiritual struggle ("do you currently have what you would describe as spiritual or religious struggles?") and loss of meaning ("do you currently struggle with loss of meaning and joy in your live?"), administered as yes/no items (King et al., 2017). Of note, we did not assess for the overall level of spirituality or religiosity or religious practices; however, prior work has found that even controlling for religious practices, spiritual struggles remained associated with psychopathology (McConnell et al., 2006).

***Brief Trauma Questionnaire* (BTQ):** The BTQ (Schnurr et al., 1999) is a screening instrument composed of 10 potentially traumatic life events (e.g., unwanted sexual contact).

Criterion A events were computed based on the endorsement of exposure and, for applicable items, associated experiences of serious life threat or injury.

Psychiatric symptoms: The *Patient Health Questionnaire-8* (PHQ-8; Kroenke et al., 2001,2009) was used to screen for depression over the past 2 weeks. A score of ≥ 10 indicates a positive screen for depression. Items on the PHQ-8 correspond to diagnostic criteria for major depressive disorder, excluding suicidal ideation. Internal consistency in the present study was excellent (α = .92). The *Generalized Anxiety Disorder-2* (GAD-2; Plummer et al., 2016) is a two-item screening measure of anxiety over the past 2 weeks, scored on a 0–6 scale, with a score ≥ 3 taken to be a positive screen. In the current sample, internal consistency was acceptable (α = .78; Spearman-Brown = 0.79). Finally, the *PTSD Checklist for DSM-5* (PCL-5; Weathers et al., 2013) is a 20-item self-report scale that measures the overall severity of PTSD symptoms over the past month. Higher scores indicate higher levels of posttraumatic symptoms. Internal consistency was excellent (α = .95). Having a score ≥ 31 (Bovin et al., 2016) and endorsing at least one event on the BTQ was interpreted as a positive screen.

Data Analysis

Prior to data analysis, data quality checks were run (including eliminating potential random responders, as noted above) and missing data were treated using multiple imputation procedures implemented in SPSS 28 (IBM, Armonk, New York, United States). After data preparation, descriptive statistics, normality checks, and internal consistency tests were conducted on MSRS subscales and other measures. As all scales were not normally distributed, we opted to use Spearman correlations for tests of convergent and discriminant validity.

Factor analyses were conducted in JASP 0.16.3 (JASP Team, Amsterdam). First, we conducted a weighted least squares (WLS) exploratory factor analysis (EFA) with promax rotation on a randomly selected 50% of the sample (n = 932). We determined the appropriate number of factors through several means. First, we utilized parallel analyses, which repeatedly simulate factor analyses with the same number of variables and participants (Horn, 1965). Parallel analysis was conducted using the *fa.parallel* function in the R "psych" package (Version 2.2.9; Ravelle, 2018) from within JASP, which is an R-based platform. We also examined model fit statistics for 1–12 factor models and considered utility, maximizing the number of factors while having items that meaningfully grouped together and disallowing less than two items per factor. We retained items with a rotated factor loading > 0.4. We opted to compare models by evaluating models with one to 12 factors, as 12 was the theoretical maximum given that it was the number of "resilience factors" included in the scale based on a review of the literature. Following this EFA, we conducted a CFA with diagonally WLS (DWLS) estimation for one- to six-factor models in the other 50% of the sample (n = 932); DWLS was utilized due to the nonnormality of the data. CFI and TLI ≥ 0.95, RMSEA ≤ 0.06, and SRMR ≤ 0.08 were interpreted to indicate an excellent fit (Hu & Bentler, 1998, 1999). Following this CFA, preliminary subscale scores (sums of items loading on each respective factor) and a scale total score were computed.

Results

Demographics

Overall, most of the sample identified as male ($n = 1,154$; 61.9%), had self-reported incomes over $50,000 ($n = 1,099$; 59.0%), and had at least a 4-year college degree ($n = 1,547$; 83.0%). Participants ranged from 19 to 78 years of age. See Table S1 in the online supplemental materials for extended demographics. The split samples, namely the 932 distinct participants included in the EFA and CFA, respectively, did not vary with respect to their demographic characteristics.

Overall, 72.4% of the sample screened positive for depression, anxiety, and/or PTSD. The overall mean scores on the PHQ-8 ($M = 11.3$, $SD = 6.5$) and the PCL-5 ($M = 37.8$, $SD = 22.3$) were above recommended clinical cutoffs. The mean GAD-2 score in the full sample was approaching the clinical cutoff ($M = 2.7$, $SD = 1.7$).

As noted previously, potential Criterion A trauma exposures were evaluated using the BTQ; we followed scoring rules for this instrument that required life threat and/or serious injury in addition to exposure for eight of 10 items. Applying these rules, the five most frequently endorsed events on the BTQ were: witnessing or fearing that someone was seriously injured or killed (24.5%; $n = 457$), being in a serious accident (21.9%, $n = 409$), having a close friend or family member died violently (21.7%, $n = 406$), being in a natural or technological disaster (20.7%, $n = 386$), and being physically assaulted (18.4%, $n = 343$).

Factor Structure

Internal consistency for the full scale was high ($\alpha = .97$). Prior to factor analyses, we examined the score distributions and internal consistency of the original 36 frequency-item scale. The mean inter-item correlation was 0.47 (range: 0.24–0.73) and the mean item score was 2.1 (range: 1.8–2.4). None of the MSRS items were normally distributed according to the Shapiro–Wilk test of normality, all ps < 001. Seven items were platykurtic (items 17 = −1.16, item 25 = −1.04, item 27 = −1.15, item 28 = −1.12, item 33 = −1.019, item 34 = −1.17, and item 35 = −1.15); of note, this included all three items assessing religiosity/spirituality (items 17, 34, and 35).

Per our analytic plan, we then submitted the 36-item scale to a series of EFAs, testing the fit of models including between one and 12 factors. Results of these sequential EFAs suggested that a seven-factor model provided a good fit to the data, $\chi^2 (399) = 1,092.90$, $p < .001$, RMSEA = 0.030, 90% CI [0.03, 0.03], TLI = 0.97; the parallel analysis also recommended a seven-factor model. In this model, 12 items had factor loadings 0.4, our predetermined cutoff, and were therefore dropped, resulting in a 24-item scale. Models with 8–12 factors were discarded due to a combination of (a) worsening fit statistics, (b) having no items with > 0.4 loadings on a given factors, or (c) factors with only one retained item (see Table S2 in the online supplemental materials).

The retained seven-factor model accounted for 57.5% of the scale variance. Factor 1 consisted of five items thematically related to a sense of meaning and purpose; Factor 2 of three items related to religiosity/spirituality; Factor 3 of five items pertaining to cognitive

and emotional flexibility; Factor 4 of three items related to brain and physical fitness; Factor 5 of three items related primarily to the use of role models; Factor 6 of two items related to providing social support; and Factor 7 of two items related to facing fears (see Table S3 in the online supplemental materials).

CFA on the second half of the sample showed that models with one-to-seven factors had excellent fit according to TLI, CFI, and SRMR model fit statistics; however, only the six-factor, χ^2 (174) = 522.77, $p < .001$, RMSEA = 0.046, 90% CI [0.042, 0.051], $P_{\text{RMSEA}} > .05$ = 0.900, and seven-factor models, χ^2 (284) = 729.25, $p < .001$, RMSEA = 0.048, 90% CI [0.044, 0.052], $P_{\text{RMSEA}} > .05$ = 0.777 had RMSEA significance values > .05 suggestive of good model fit (see Table S4 in the online supplemental materials). Models with more than seven factors were not submitted to CFA as they were previously rejected following EFA. Given the strong similarities between model fit statistics of the seven and six-factor models, and the inappropriateness of using model comparison tests for nonnested models, we opted to examine the factor content in both models to facilitate decision-making regarding which model to retain. The seven-factor model primarily differed from the six-factor model by the presence of an additional five-item factor comprised of items assessing cognitive and emotional flexibility. Given the theoretical importance of these behaviors to psychological resilience, we opted to conduct further analyses using the seven-factor model.

The 24-item scale had observed range of 0–96, which represented the full possible range of scores; the mean total score ($M = 51.2$; $SD = 20.4$) and median (51) were slightly above the numeric midpoint, which was found to be the modal score (48). See Table S5 in the online supplemental materials for descriptive statistics on subscales. Full-scale internal consistency was excellent ($\alpha = .95$). Subscale internal consistency ranged from good (spirituality: $\alpha = .87$, meaning and purpose: $\alpha = .86$; cognitive and emotional flexibility: $\alpha = .86$; providing support: $\alpha = .82$, Spearman–Brown = 0.82; facing fears: $\alpha = .82$, Spearman–Brown = 0.82) to adequate (role models: $\alpha = .78$; physical and brain fitness: $\alpha = .77$). As would be expected, all seven subscales were significantly intercorrelated (rs .44–.89, all ps < .001). The analyses that follow utilize the seven subscale scores and the full-scale score for tests of convergent and discriminant validity within full sample.

Construct Validity

We evaluated the convergent validity of the 24-item MSRS by examining its association with CD-RISC scores. As expected, there was a positive correlation between the MSRS and CD-RISC total scores, rs = .48, 95% CI [0.44, 0.52], $p < .001$. Correlations for the seven MSRS subscales emerging from factor analyses were generally consistent with expectations (see Table S5 in the online supplemental materials). Notably, the MSRS meaning/personal growth subscale was most strongly associated with PIL-SF (purpose in life) scores. Scores on both the MSRS role models and provision of social support subscales were positively correlated with scores on the MOS-5 (perceived social support) and MOS-5-P (providing support to others) scales, respectively, though correlations between other subscales and the social support scales were similar in direction and magnitude (see Table S5 in the online supplemental materials). Further, group comparisons indicated that participants endorsing current spiritual/religious struggles ($n = 791$, 42.4%) had higher spirituality subscale scores,

$M_{\text{diff}} = 1.30$, $t(1,848.45) = 8.09$, $p < .001$, $d = 0.37$; similarly, those endorsing loss of meaning and joy ($n = 980$, 52.6%) had lower meaning/personal growth subscale scores, $M_{\text{diff}} = -1.12$, $t(1,862) = -5.25$, $p < .001$, $d = -0.24$.

We also examined correlations between the MSRS and PHQ-8, GAD-2, and PCL-5 total scores, respectively. MSRS total scores were unexpectedly weakly positively correlated with PHQ-8 ($rs = .09$, 95% CI [0.04, 0.14], $p < .001$), GAD-2 ($rs = .07$, [−0.04, 0.05], $p = .002$), and PCL-5 scores ($rs = 0.18$, [0.14, 0.23], $p < .001$). Overall scores on the MSRS-24 did not differ between those with ($M = 51.6$, $SD = 20.3$) and without ($M = 50.9$, $SD = 20.5$) at least one positive screen for psychiatric distress, $t(1,862) = -1.39$, $p = .167$, $d = -0.07$.

With respect to discriminant validity, consistent with our hypothesis, we did not observe a significant correlation between the total count of potential Criterion A events endorsed on the BTQ and the MSRS total scores, $rs = .03$, 95% CI [−0.01, 0.08], $p = .163$.

Scale Interpretation

To preliminarily investigate scale interpretation, we binned scores on the MSRS to create four groups (within −1 and +1 *SD*, below −1 *SD*, and above 1 *SD*, respectively). Then, within these bins, we examined the total number of items endorsed > 1 (*rarely true*) across the scale, to provide a count of how many strategies participants employed. We then examined mean CD-RISC scores within each bin. The median number of MSRS items endorsed by the group ranged from 3 (*very low resilience*) to 24 (*high resilience*); of note, the latter corresponds to selecting "sometimes true" or "true nearly all the time" for every scale item (see the online supplemental materials). Descriptively, those participants in the "moderate" resilience category (MSRS scores 45–87) had mean CD-RISC scores similar to a nonclinical sample (Velickovic et al., 2020) while those in the "low" and "very low" category resembled psychiatric samples, including patients with generalized anxiety disorder (Simon et al., 2009).

Discussion

This article describes the development and initial validation of the MSRS, a novel resilience scale that assesses a range of emotions, thoughts, and behaviors that people may use to successfully manage and adapt to stressful situations. The rationale for the development of this scale was the understanding that people are not just inherently resilient—they often intentionally commit to actions and connect to resources that can help bring about this outcome (Crane et al., 2019; Kaplan et al., 2021; Southwick et al., 2016). The measure was developed through expert consensus meetings and a thorough review of the resilience literature. Initial scale validation procedures included evaluations of construct, convergent and discriminant validity. Factor analytic procedures reduced a 36-item scale to 24 items; and supported the presence of seven correlated factors. Scores on these subscales and the total scores generally converged with scales of related constructs; and the total score was not associated with lifetime trauma count, supporting discriminant validity.

The MSRS was constructed to include three Likert-scale frequency items for each of the 12 domains spanning a range of resilience "factors." Following factor analyses, we observed

that each domain had at least one item represented in the final measure. Two subscales, together comprising seven items, assess dimensions of emotion regulation, naming cognitive and emotional flexibility, and directly confronting fears. These dimensions of active coping are well-established contributors to resilience following traumatic and stressful events (Feder et al., 2016; Galatzer-Levy et al., 2012; Thompson et al., 2018). Two additional factors comprised (a) leaning on role models and obtaining social support and (b) providing support and acting altruistically. Recent work has found that both these factors are linked to greater resilience separately and synergistically (Na et al., 2022). Three physical and brain fitness-related items loaded on a single factor. Research has found that among other variables, intellectual curiosity and physical activity differentiated between resilience and psychiatrically-distress veterans (Pietrzak & Cook, 2013). A meaning and personal growth factor is in general alignment with recent developments from positive psychology, focused on living according to one's core values and benefit-finding after traumatic events (Seligman, 2019; Waters et al., 2022). Finally, we found that all three religion/ spirituality (R/S) items that we drafted loaded on a single factor; studies, including in veteran samples, have linked R/S to resilience (Sharma et al., 2017).

Some characteristics of the sample may limit the generalizability of findings. First, the sample was not nationally representative and was mostly male, college-educated, and married/partnered. Second, though we asked about trauma exposure, and limited analysis for PTSD symptoms to those endorsing one potentially traumatic event, we did not anchor the PCL-5 to a specific incident; thus, we cannot be certain of which event is linked to PTSD symptoms. Third, with respect to probable psychopathology, we also found that 72.4% had positive screens for depression, anxiety, and/or PTSD. These results are substantially higher than those found in prior studies. For example, a Census-based survey of U.S. adults during the first wave of the COVID-19 pandemic found screen-in rates of 36% for depression and/or anxiety (Twenge & Joiner, 2020). This disparity raises the possibility that MTurk-based recruitment may skew toward psychopathology. Of note, we recruited participants for a study titled "Coping with Stressful Events", which could have attracted more symptomatic individuals. Contrary to expectations, we found weak but statistical correlations between the MSRS and measures of psychiatric symptoms, which also could be attributed to the sample composition and high prevalence of positive screens for probable psychopathology.

Additional research is needed to further evaluate the validity and reliability of the MSRS. Due to the study design, we were unable to establish test–retest reliability and/or predictive validity with temporal controls. The application of the MSRS as an outcome measure would be an important area of further investigation. Indeed, our team has developed psychoeducational interventions based on many of the resilience factors that the scale assesses (Charney et al., 2020; DePierro et al., 2020, 2021). Its relative brevity makes it amenable to app-based delivery and facilitates the personalization of resilience training content. Finally, how MSRS factors are associated with functioning in the face of distress is an important consideration and could not be established with the present dataset, as we did not administer a self-report scale of functional status/impairment or employ a longitudinal study design.

Our analyses allowed us to make preliminary inferences regarding the interpretation of MSRS scores. As a dimensional measure, the scale was developed such that higher scores indicate greater resilience. Supporting this interpretation, we found a small but significant correlation between the MSRS and the CD-RISC. With respect to a cut-point, we suggest that scores of 45 or higher on the MSRS may indicate average or higher resilience. We found that the "moderate resilience" group (MSRS total score range 45–87) had a mean score on the CD-RISC that matched a nonclinical sample (Velickovic et al., 2020). With respect to the number of strategies (items) endorsed, the "very low resilience" group endorsed a median of three of 24 items; by contrast, the "moderate resilience" group's median score was 21, seven times higher. Given the significant correlations among MSRS subscales, and between subscales and related scales (e.g., measuring optimism, social support, and purpose in life), we do not recommend interpreting factors in isolation at this time.

Notwithstanding the noted limitations and directions for further research, the results of this study provide initial validation data supporting the MSRS, a novel seven-factor measure of feelings, thoughts, and behaviors linked to psychological resilience, which appears to converge though not entirely overlap with an existing well-validated resilience scale. This finding is not surprising, given that we are approaching the measurement of resilience from the perspective of experiences that support the adaptation to stress, rather than self-assessed dispositional traits. Further research is needed to further evaluate the validity and psychometric properties of this scale; determine interrelationships between engagement in various resilience-promoting strategies and psychopathology and functioning over time; and examine the utility of this scale in assessing the efficacy/effectiveness of resilience-promoting interventions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Clinical Impact Statement

This study describes the development and preliminary assessment of a new scale of psychological resilience called the Mount Sinai Resilience Scale. It includes many factors that can contribute to a person's resilience following a challenging life event and may be a helpful tool for evaluating response to resilience-building or mental health interventions.