Finding Benefits During Collective Stress: A Study of Health Behaviors in a Longitudinal Representative U.S. Sample During the COVID-19 Era

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Objective: Cognitive strategies like finding benefits during adversity may facilitate coping during collective stressors (like COVID-19) by reducing distress or motivating health protective behaviors. *Method:* We explored relationships between benefit finding, collective- and individual-level adversity exposure, psychological distress, and health protective behaviors using longitudinal data collected during the COVID-19 era from a representative, probability-based sample of U.S. residents: Wave 1 ($N = 6,514$, March 18, 2020–April 18, 2020, 58.5% completion rate); Wave 2 ($N = 5,661$, September 26, 2020–October 16, 2020, 87.1% completion rate); Wave 3 ($N = 4,881$, November 8, 2021–November 24, 2021, 75.3% completion rate); and Wave 4 ($N = 4,859$, May 19, 2022–June 16, 2022, 75.1% completion rate). *Results:* Benefit finding was common; k-means clustering (an exploratory, data-driven approach) yielded five trajectories: always high (15.85%), always low (18.52%), always middle (28.47%), increasing (17.79%), and decreasing (19.37%). Benefit-finding trajectories were generally not strong correlates of psychological distress and functional impairment over time. Rather, benefit finding robustly correlated with health protective behaviors relevant to COVID-19 and the seasonal flu. In covariate-adjusted models, benefit finding positively correlated with more social distancing ($\beta = .24$, $p < .001$) and mask wearing ($\beta = .18$, $p < .001$) at Wave 2 and greater COVID-19 (odds ratio, $OR = 1.23$, $p = .001$) and flu ($OR = 1.29$, $p < .001$) vaccination at Wave 3. *Conclusions:* Although benefit finding was not generally associated with lower psychological distress during a collective stressor, it correlated with engagement in stressor-related health protective behaviors.

Public Significance Statement
Finding benefits or "silver linings" during collective stress may not be associated with reduced psychological distress. However, finding benefits may promote cognitive coping strategies that encourage health protective behaviors.

Keywords: benefit finding, collective trauma, COVID-19, vaccination, health protective behaviors

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During the COVID-19 pandemic, escalating threats and social crises repeatedly shattered assumptions of safety and security, taxing many people's coping capacity (R. C. Silver et al., 2021). By mid-2020, it was clear the COVID-19 pandemic would drag on far beyond the "2 weeks to slow the spread" initially conveyed to the public. As the pandemic evolved into an ongoing chronic stressor, many individuals reported elevated psychological distress (Ettman et al., 2022). Health protective behavioral responses to COVID-19 and related public health threats included ongoing engagement in evolving practices such as mask wearing, social distancing (Garfin et al., 2021), and getting vaccinated (Viswanath et al., 2021). COVID-19 is now endemic, and viral threats (e.g., Respiratory Syncytial Virus, the seasonal flu), as well as other collective stressors (e.g., geopolitical crises and gun violence), continue to threaten population health. Despite copious research on psychological responses to COVID-19 (Cénat et al., 2021), little work has explored how people cognitively processed this protracted crisis over time. While decades of stress and coping research have documented that coming to terms with individual and collective trauma has substantial implications for adjustment and well-being (R. C. Silver & Updegraff, 2013), how these cognitive processes were associated with psychological and behavioral adaptation during the era of COVID-19 has been underexplored.

Cognitive Coping Strategies During Adversity

Positive psychological sequelae, including cognitive coping to encourage adaptation in response to adversity, have been frequently documented after major stressors (Applebaum et al., 2021; R. C. Silver & Updegraff, 2013). Examples include cognitive strategies such as meaning-making (i.e., attempts to make sense of a stressful/traumatic event; Davis et al., 2000; R. L. Silver et al., 1983; Updegraff et al., 2008), positive reframing (Carver et al., 1993), and the related phenomenon of benefit finding (i.e., finding positive effects or "silver linings" in adversity) (Helgeson et al., 2006). Indeed, finding meaning or benefits has been documented after many individual-level stressors including the loss of a child or spouse (Lehman et al., 1987), personal illness (Urcuyo et al., 2005), natural disasters (Stanko et al., 2015), combat (Wood et al., 2023), and in small, nonrepresentative samples during the acute phase of the COVID-19 pandemic (Jenkins et al., 2021; Kowalski et al., 2022; Yang et al., 2021).

A cognitive coping strategy like benefit finding may not be effective for all people or situations. Although some evidence suggests cognitive processes including benefit finding correlate with long-term psychological adjustment after personal loss and acute trauma (Davis et al., 2000; Updegraff et al., 2008), a meta-analysis of cross-sectional studies found stressor-related benefit finding was only inconsistently associated with positive psychological outcomes (Helgeson et al., 2006). Relatedly, benefit finding among veterans buffered combat-related posttraumatic stress disorder (PTSD) in cross-sectional, but not longitudinal, analyses (Wood et al., 2023). This may be because searching for meaning in adversity is related to ruminative processes (Linley & Joseph, 2004). In a sample of paternal incest survivors, daughters who searched for, but did not find meaning in their trauma reported elevated symptoms of psychopathology and social impairment (R. L. Silver et al., 1983; and see Davis et al., 2000, for similar findings after sudden loss of a loved one). This may help explain associations between positive psychological sequelae during adversity and traumatic stress symptoms (Pietrzak et al., 2021), which share conceptual overlap with anxiety-related rumination.

The positive effects of benefit finding have been similarly mixed in the context of collective stressors. Benefit finding positively correlated with well-being in the early phase (April 2020) of the COVID-19 pandemic (Cox et al., 2021). A longitudinal study of M-Turk workers from April to September 2020 found relatively high and stable reports of positive cognitive experiences (Park et al., 2022), yet it is unclear what adaptive purpose such experiences might serve. Moreover, finding meaning during a natural disaster (Hurricane Harvey) did not ameliorate psychological distress over time (Maffly-Kipp et al., 2021). During ongoing, chronic collective traumas, individual-level secondary stressors (i.e., disaster-precipitated events such as financial loss, injury, or death) may prolong ongoing disruption and portend worse psychological outcomes after large-scale events (Kessler et al., 2012).

Benefit Finding and Positive Behavioral Responses to Stress

If benefit finding during adversity does not exhibit robust associations with reduced distress, perhaps it instead promotes other forms of healthy adaptation to stress. Adversity-related positive psychological processes might promote resilience (Park, 2010), continued thriving (Bonanno, 2004), and performance of adaptive behaviors (Miao et al., 2022), or buffer the negative impact of upsetting news (e.g., failing the bar exam; Rankin & Sweeny, 2022). Indeed, benefit finding may have been particularly important during the pandemic, since the stressor was protracted and individuals were asked to continue performing evolving protective behaviors to protect personal and population health. Given that research on chronic collective stress has suggested null (Maffly-Kipp et al., 2021) or positive (Pietrzak et al., 2021) associations between benefit finding and distress, it is critical to explore what other adaptive functions benefit finding may have beyond distress reduction.

Most prior research on benefit finding has used clinical, convenience, or nonprobability-based samples, often excluding key groups (e.g., underrepresented minorities and low socioeconomic status respondents; Pierce et al., 2020), and has not carefully explored the relationship between benefit finding and adaptive behaviors. Furthermore, much of the longitudinal research on benefit finding tends to focus on average trajectories over time, failing to capture patterns of variability that may occur within clusters of respondents. Analytic strategies that account for between-person differences in trajectories of responses can advance our understanding of how benefit finding is associated with positive psychological and behavioral responses to collective stress, potentially reconciling divergent findings.

Even if benefit finding is not a transformative experience protecting against future distress, effective coping involves much more than just distress mitigation. Protective actions often cooccur with distress, suggesting distress may motivate actions to protect self and others (Consedine & Moskowitz, 2007). Data from a large representative sample of U.S. residents found that distress from the 2014 Ebola outbreak was positively associated with health protective behaviors (Garfin, Holman, et al., 2022); small samples collected during COVID-19 found comparable results (Harper et al., 2020).

Most research on benefit finding and other positive psychological experiences during adversity has focused on emotional rather than behavioral outcomes (Dunkel Schetter & Dolbier, 2011). Yet an individual could be emotionally distressed by a chronic stressor and still engage in protective action(s) to facilitate positive long-term outcomes (e.g., health, well-being). Indeed, despite elevated psychological

distress evident throughout the populace during COVID-19 (Ettman et al., 2022), many people engaged in health protective behaviors (Reinders Folmer et al., 2021). Experiences such as benefit finding may have helped provide cognitive coping resources to sustain these behaviors despite ongoing distress.

The Present Study

Herein, we examined associations between benefit finding and psychological and behavioral responses to stress during the COVID-19 era (2020–2022). Starting in the acute phase of the pandemic, we assessed a large, nationally representative, probability-based sample of U.S. residents and followed them for 2+ years. This preregistered, exploratory study had several aims: (a) to document benefit finding that may have occurred during the COVID-19 pandemic using quantitative and qualitative metrics; (b) to characterize and describe trajectories of benefit finding during COVID-19; (c) to evaluate relationships between benefit finding and psychological distress over time; and (d) to evaluate cross-sectionally the relationship between benefit finding and evolving health protective behaviors.

Method

Data Collection and Sample

Respondents for this longitudinal cohort study were drawn from the NORC AmeriSpeak panel, a probability-based panel of 35,000 U.S. households. To create a representative sample, households were selected at random from across the United States. The AmeriSpeak Panel is the only probability panel in the United States using random door-to-door panelist recruitment (via U.S. mail, telephone, and field interviews) to select participants for inclusion. Unlike typical Internet panels (where those with Internet access can opt-in), no one can volunteer for the AmeriSpeak panel.

The Wave 1 (W1) survey was fielded to a sample of 11,139 panelists in three consecutive 10-day cohorts from March 18, 2020 to April 18, 2020; 6,514 responded (58.5% completion rate). Participants received an email stating that the survey was available, and they completed the survey online anonymously. The surveys were confidential, self-administered, and accessible at any time for a designated period; participants could complete them only once. Details on survey administration and demographics are available in Holman, Thompson, et al. (2020).

The Wave 2 (W2) survey was fielded 6 months later (September 26, 2020 to October 16, 2020) to all available W1 panelists (6,501 panelists); 5,661 completed the W2 survey (87.1% completion rate). The Wave 3 (W3) survey was fielded from November 8, 2021 to November 24, 2021; 6,486 panelists were eligible: 4,881 responded (75.3% completion rate). The Wave 4 (W4) survey was fielded May 19, 2022–June 16, 2022 to 6,473 panelists; 4,859 completed the survey (75.1% completion rate). The final weighted sample at W1 was 48.1% male and the age ranged from 18 to 97 years old ($M = 47.50$ years; $SD = 17.44$). Ethnic/racial identity was 63.6% White (non-Hispanic), 11.8% Black (non-Hispanic), 16.0% Hispanic, and 8.7% other ethnicities. About one-third of the weighted sample (33.6%) had earned a bachelor's degree or higher; the median annual income was $40,000–$49,999. At W2, political party identification was: strong Democrat 15.4% ($n = 874$), moderate Democrat 17.9% ($n = 1,014$), lean Democrat 11.55% ($n = 654$), don't lean 10.0% ($n = 565$), lean Republican 16.6% ($n = 942$), moderate

Republican 16.4% ($n = 930$), and strong Republican 11.4% ($n = 644$). NORC compensates AmeriSpeak panelists with points worth a cash equivalent. Participants were compensated between $4 and $10 cash equivalent at each wave. Participants provided informed consent when they joined the NORC panel and were informed that their identities would remain confidential. All procedures for this study were approved by the Institutional Review Board at the University of California, Irvine.

Measures

All study-specific measures are included in SF1 of the online supplemental materials.

Benefit Finding (W2 Through W4)

Five questions asked participants to report how much they had personally experienced any of the following pandemic-related outcomes, with endpoints 1 (*not at all*) to 5 (*a great deal*): (a) reprioritized the important relationships in my life; (b) felt a greater sense of community; (c) felt more grateful for what I have in my life; (d) recognized strengths and coping skills I did not know I had; and (e) reflected on and/or adjusted my priorities in life. Items were assessed and averaged at each wave. Cronbach's α was appropriate at W2 (.85), W3 (.83), and W4 (.89). Items were derived using theory and prior research (see Helgeson et al., 2006) and modified for relevancy to COVID-19. To assess potential benefits people experienced other than these five items, we asked participants to describe any other positive outcome(s) they may have experienced and provided an open-ended text response option.

Psychological Distress

Traumatic Stress Symptoms (W1 Through W4). At W1, respondents completed a modified version of the Acute Stress Disorder Scale (*Diagnostic and Statistical Manual of Mental Disorders* [5th ed.] Version; Bryant, 2016) to capture COVID-19-relevant traumatic stress symptoms experienced in the past week. Responses across each item ranged from 1 (*not at all*) to 5 (*a great deal*). Scale reliability was appropriate (α = .87). This measure has been reported elsewhere (Garfin, Djokovic, et al., 2022; Holman, Thompson, et al., 2020). At W2–W4, posttraumatic stress symptoms were measured via the five-item Primary Care PTSD Screen (Prins et al., 2016), modified to allow responses from 1 (*not at all*) to 5 (*a great deal*). At each wave, items were averaged. Posttraumatic stress symptoms were assessed with respect to COVID-19 at W2 and W3 and the Ukraine war at W4 as it was receiving widespread media coverage at the time, with negative implications for psychological distress (Su et al., 2023). Cronbach's α was appropriate at W2 (.82), W3 (.82), and W4 (.78). This measure has been reported elsewhere (Garfin, Thompson, et al., 2022; Thompson et al., 2022).

Global Distress (W1 Through W4). A nine-item version of the Brief Symptom Inventory 18 measured global distress (Derogatis, 2001). Respondents reported anxiety, depression, and somatization symptoms in the past 7 days on a scale from 0 (*not at all*) to 4 (*extremely*). Reliability was appropriate at W1 (.85), W2 (.86), W3 (.86), and W4 (.91). This measure has been used in prior research (Garfin, Thompson, et al., 2022; Sweeting et al., 2020).

Functional Impairment (W1 Through W4). Prior week functional impairment was assessed using a modified version of four SF-36 items that measured social and work-related impairment due to physical and emotional health (Ware & Sherbourne, 1992) on a 5-point scale from 1 (*none of the time*) to 5 (*all of the time*). Cronbach's α was appropriate at W1 (.85), W2 (.86), W3 (.86), and W4 (.87). This item has been used in prior research (Holman, Garfin, et al., 2020).

Emotional Exhaustion (W2 Through W4). Emotional exhaustion was measured by asking participants on a scale from 1 (*never*) to 5 (*all the time*) how often in the past week they felt: (a) overwhelmed, (b) you are coping well, (c) emotionally exhausted, (d) hopeful about the future, (e) stressed, and (f) in control. Three items were reverse scored so that higher scores reflect greater emotional exhaustion and then were averaged. Cronbach's α was appropriate at W2 (.86), W3 (.84), and W4 (.83). Items were designed to reflect challenges during the COVID-19 pandemic using face validity and have been reported elsewhere (Jones et al., 2023).

Behaviors

Health Protective Behaviors (W2 and W3). At W2, COVID-19-related health protective behaviors were assessed on a scale of 1 (*never*) to 5 (*all the time*) and included: (a) wearing a facemask in public and (b) social distancing, a composite of four items (see SF1 in the online supplemental materials). Social distancing items were averaged (see Garfin et al., 2021, 2023). At W3, vaccination intentions and behaviors were assessed with the following items: "Have you gotten the COVID-19 vaccine?" with response options 1 (*yes, voluntarily*), 2 (*yes, but only because I was required to by my employer/school*), 3 (*no, but I plan to*), 4 (*no, and I do not plan to*), and 5 (*no, I am medically unable*). Items were coded into a dichotomous variable 1 (*I am vaccinated, 1 or 2*) or 0 (*I am not vaccinated, 3, 4, or 5*). An analogous item was used to assess flu vaccine behavior at W3. All items were derived from U.S. Centers for Disease Control (CDC) guidelines (CDC, 2023) and reflected the evolving recommendations for COVID-19 mitigation over the 2 years of the study. By Spring 2022, most COVID-19 measures were optional (CDC, 2023), making COVID-19-related behaviors less relevant at W4.

Stress Exposure

Collective Trauma-Related Exposure and Secondary Stressors (W1 Through W3). Exposure to the COVID-19 outbreak and related stressors was reported using a checklist (Holman, Thompson, et al., 2020; Thompson et al., 2022). Due to the pandemic's evolving nature, some exposure items were changed for ecological validity at W2 and W3. At W1, six items assessed community exposure (e.g., my community was instructed to "shelter in place"; see SF1 in the online supplemental materials). Seven items assessed secondary stressors (e.g., lost job, see SF1 in the online supplemental materials). A count score for each was generated.

At W2, participants reported if they had personally had COVID (coded yes/no). Six items assessed their COVID-19-related financial stressors (e.g., lost wages, lost job, unable to find work; see SF1 in the online supplemental materials) and nine items assessed their secondary stressors (could not get a COVID test; see SF1 in the online supplemental materials).

At W3, participants reported: 1 (*I have not had COVID-19*); 2 (*I have/had COVID-19 with no or only mild symptoms*); 3 (*I have been very sick from COVID-19, but not hospitalized*); 4 (*I was hospitalized with COVID-19, but not on a ventilator*); and 5 (*I was on a ventilator because of COVID-19*). Options for each were 0 (*did not occur*) or 1 (*occurred*). Responses were summed and then dichotomized 1 (*had COVID-19 experience,* range 1–5) or 0 (*no experience*). Participants also reported (since they were last surveyed) any secondary stressors (e.g., I couldn't get a COVID test when I wanted to, I have not had access to the resources I need; see SF1 in the online supplemental materials). Financial stressors were also reassessed.

Prepandemic and Ongoing Negative Life Events (W2 Through W4). Lifetime exposure to negative life events was assessed with eight items (e.g., serious accident, injury, or illness [not COVID-19-related]; see SF1 in the online supplemental materials for the full list). Items were derived from prior research (Seery et al., 2010). Event exposures were coded 1 (*occurred*) or 0 (*did not occur*), summed, and updated at W3 and W4.

Demographics and Pre-COVID-19 Mental Health

Participants' demographics (including age, race/ethnicity, education, gender, income, and political party identification) were collected by NORC upon enrollment in the AmeriSpeak panel and updated annually. Health information was collected by NORC upon enrollment into the AmeriSpeak panel (prior to completing W1) and updated periodically for accuracy. Participants reported whether a doctor had ever diagnosed them with anxiety, depression, or any other emotional, nervous, or psychiatric diagnosis. Responses were dichotomized 0 (*no diagnosis*) or 1 (*any mental health diagnosis*).

Analytic Strategy

All statistical analyses were conducted in Stata 17 (College Station, Texas, United States) unless otherwise noted. Descriptive statistics were calculated for all variables, including responses to individual items from the benefit finding measure. Implementing an explanatory design framework, where our qualitative findings were used to elaborate our quantitative findings, we used the wordcloud2 package (Lang & Chien, 2018) in R (R Core Team, 2022) to generate word clouds and qualitatively characterize responses to the open-ended benefit finding question. Word clouds provide a visual representation of text responses by presenting word size according to the frequency of appearance in the data. Next, each respondent's average, composite benefit score and their engagement in health behaviors were submitted to a k-means clustering procedure in R using the factoextra package (Kassambra & Mundt, 2020) to group participants into specific benefit trajectories over time and clusters of engagement in health protective behaviors. K-means clustering provides a data-driven approach to characterize longitudinal responses and allows us to parsimoniously characterize divergent trajectories without complicated models or time-varying predictors. Groupings were then exported to Stata for further analysis. First, benefit-finding group membership and health behavior group membership were examined for associations. Next, indicators of benefit-finding trajectory membership were examined using a multinomial logistic regression in which cluster membership was regressed onto participant demographics, pre-COVID-19 mental health, early COVID-19-related exposures and stressors, and lifetime individual-level adversity.

We then specified a series of multilevel models to evaluate how psychological distress (emotional exhaustion, functional impairment, global distress, and traumatic stress) changed across data collection waves and to test whether benefit finding cluster membership exhibited differential changes in outcomes over time. Given that benefit finding was measured at W2, these multilevel models were conducted using W2–W4 data. For these models, time (Level 1) was nested in respondents (Level 2). Each model was fit using maximum likelihood estimation as follows: $y_{wj} \sim \beta_0 + \beta_1 w + \beta_2$ cluster $+ \beta_3 (w \times \text{cluster})$, where w represents data collection wave, j indexes the survey respondent (so that β_{0j} and β_{1j} represent random intercepts and slopes). The fixed effects portion of each model also included an interaction between time and cluster membership indicator.

Finally, a series of cross-sectional multiple regression analyses explored benefit finding as an indicator of health protective behaviors over time, controlling for demographics, pre-COVID-19 mental health, collective stressor exposure, and individual-level adversity. Outcomes were analyzed using the Gaussian link function for the frequency of social distancing and mask wearing and the Logit link function for dichotomously coded vaccination behaviors. Indicators of engagement in health behaviors were analyzed cross-sectionally for several reasons. Most importantly, due to the evolving guidelines from the CDC regarding COVID-19 mitigation (CDC, 2023), we assessed different behaviors using different measurement scales over time.

For composite variables where participants responded to >50% of the items, a mean of available items was calculated. As demonstrated in prior simulation studies, this method produces the least amount of bias, particularly when missing data are minimal (Bell et al., 2016), and is consistent with previous analyses of these data (see Holman, Thompson, et al., 2020; Thompson et al., 2024). Unless noted, data were weighted to adjust for the probability of selection into the AmeriSpeak panel and differences between the sample and U.S. Census benchmarks, allowing for population-based estimates, despite nonresponse during the fielding period and over time. See SF1 in the online supplemental materials for more details, including a table of missing data descriptives. No variables had more than 1.5% missing data (all but one had less than 0.5%). Longitudinal, wave-specific weights accounted for attrition over time: cross-sectional, wave-specific weights were used in cross-sectional analyses, and a longitudinal weight was used in longitudinal analyses and for those analyses predicting group membership.

Our sample size ($N = 6,514$) provided power to detect extremely small effects $f^2 = .0075$ with 20 potential indicators in a linear regression model. Given our large sample and multiple analyses, we define statistical significance as $\alpha = .01$ and discuss indicators where $p \leq .01$.

Data Transparency and Openness

The study design was planned in advance. Abstracts are publicly available on the National Science Foundation website under Awards SES 2224341, 2026337, and 2049932. Analyses were preregistered on Open Science Framework https://doi.org/10.17605/OSF.IO/E5XSQ (Garfin, Jones, et al., 2022). Analyses regarding prosocial behaviors related to the Ukraine war were included in the preregistration plan but not included in this report for parsimony and are available from the authors upon request. Raw and unprocessed data and all code used in analyses are available on Inter-university Consortium for Political and Social Research at https://www.icpsr.umich.edu/web/ICPSR/studies/39032/summary. This article complies with citation standards and the American Psychological Association's journal article reporting standards-quant guidelines. We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study.

Results

Descriptive statistics for all key study variables are presented in SF2, Table S1 of the online supplemental materials. Correlations between key study variables are presented in SF2, Tables S2–S4 of the online supplemental materials.

Benefit Finding Over Time

We first examined the proportion of respondents who reported experiencing each benefit at least some of the time at W2 (3 or higher on a 5-point Likert-type scale; see Figure 1). Just over 75% of respondents indicated experiencing gratitude and 60% reported adjusting their priorities. Feeling a sense of community was reported by the smallest share of respondents (approximately 36%). We also evaluated the extent to which item responses changed over time. Mean benefit finding varied over time (intraclass correlation coefficient = 0.53, 95% confidence interval, CI [0.52, 0.55]), fluctuating around the scale midpoint (W2: $M = 2.83$, $SD = 0.97$; W3: $M = 2.72$, $SD = 0.94$; W4: $M = 2.93$, $SD = 0.96$); see Figure 2. To further contextualize the individual experience of benefit finding, qualitative results from reports of positive benefits not listed in our measurement scale are represented in word clouds from data collected at W2 ($n = 490$), W3 ($n = 262$), and W4 ($n = 308$). We analyzed the content of these fields across each wave (Figure 3). At W2, time ($n = 53$), family ($n = 43$), life ($n = 26$), and home ($n = 24$) were the top words used by respondents. By W4, 26 months after COVID-19 began, top-reported benefits were family ($n = 32$), health ($n = 24$), time ($n = 22$), and life ($n = 21$), see Figure 3.

We next evaluated whether respondents fell into different trajectories of benefit finding over time (see Figure 4). We used a series of 30 cluster estimation indices to determine the optimal number of clusters given our data and weighed this recommendation against the interpretability of fewer or more clusters. Five trajectories were identified, representing clusters of individuals reporting stable patterns

Figure 1

Proportion and Count of Respondents Reporting Experiencing Each Benefit at Least "Some of the Time" at Wave 2
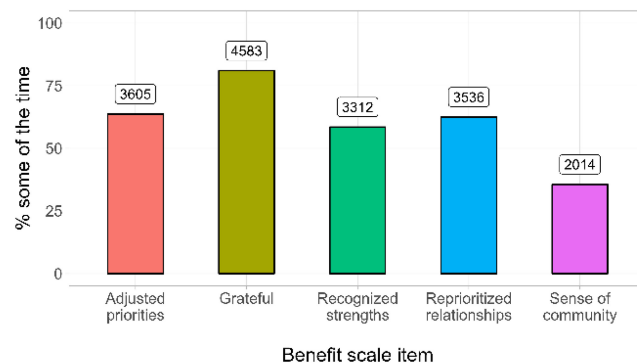
Note. See the online article for the color version of this figure.

Figure 2

Raw Distribution of (Colored Points) and Mean (Black Line) Responses to Each Benefit Item at Each Wave of Data Collection
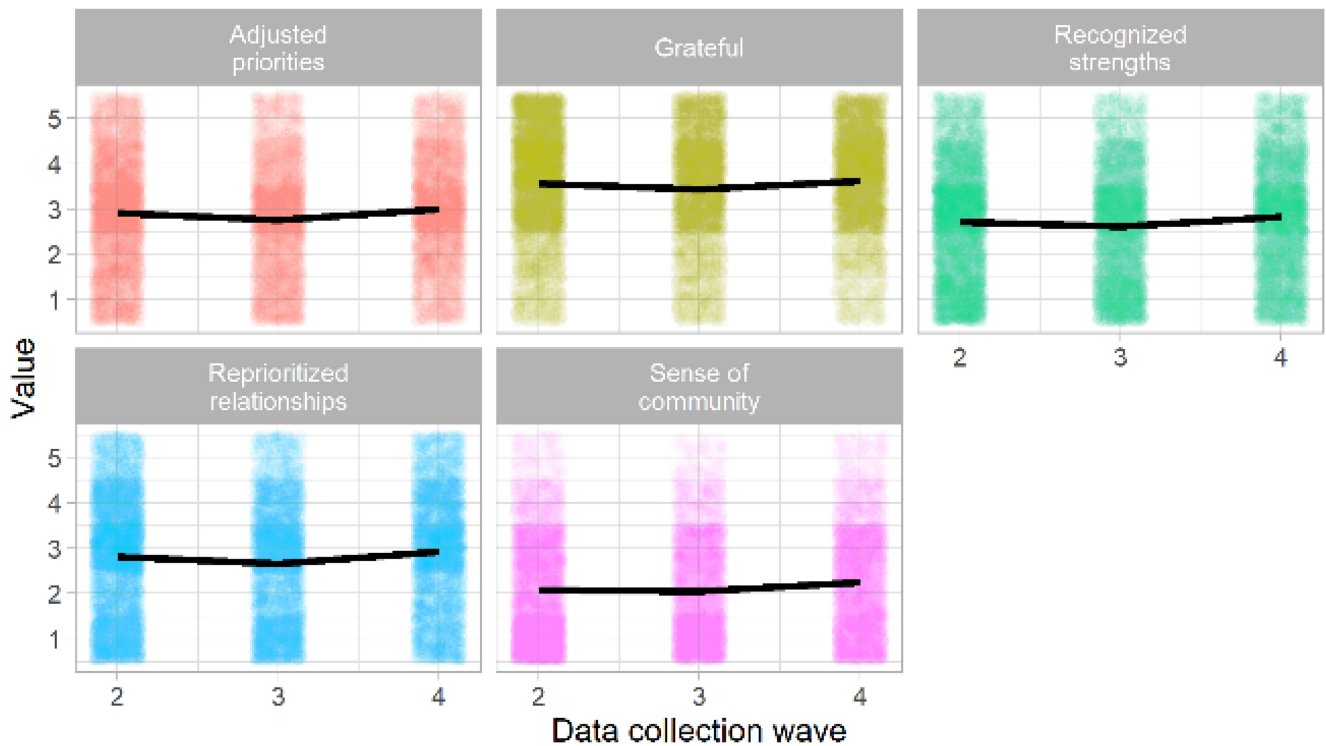
Note. Greater density indicates more respondents reported those scores. Wave 2, $N = 5,661$; Wave 3, $N = 4,881$; and Wave 4, $N = 4,859$. See the online article for the color version of this figure.

of benefit finding (always high, always low, and always middle) and individuals who changed over time (decreasing and increasing). The always middle group was the largest cluster ($n = 1,213$), followed by the increasing ($n = 825$), always low ($n = 789$), decreasing ($n = 758$), and always high ($n = 675$) clusters.

Correlates of Benefit Finding Over Time

Relative to the always low benefits cluster, COVID-19-related secondary stress at W1 was associated with a greater likelihood of being in the always high (relative risk ratio [RRR] $= 1.44$, $SE = 0.11$, $p < .001$), always middle ($RRR = 1.34$, $SE = 0.09$, $p < .001$), decreasing ($RRR = 1.33$, $SE = 0.10$, $p < .001$), or increasing ($RRR = 1.15$, $SE = 0.08$, $p = .01$) cluster. Compared with men, women were more likely to be in every cluster except the always low cluster; they exhibited the highest likelihood to be in the always high cluster ($RRR = 5.05$, $SE = 0.81$, $p < .001$). Relative to younger adults, older adults were more likely to be in the always high ($RRR = 1.02$, $SE = 0.01$, $p < .001$) and less likely to be in the increasing ($RRR = 0.98$, $SE = 0.004$, $p = .02$) benefits cluster.
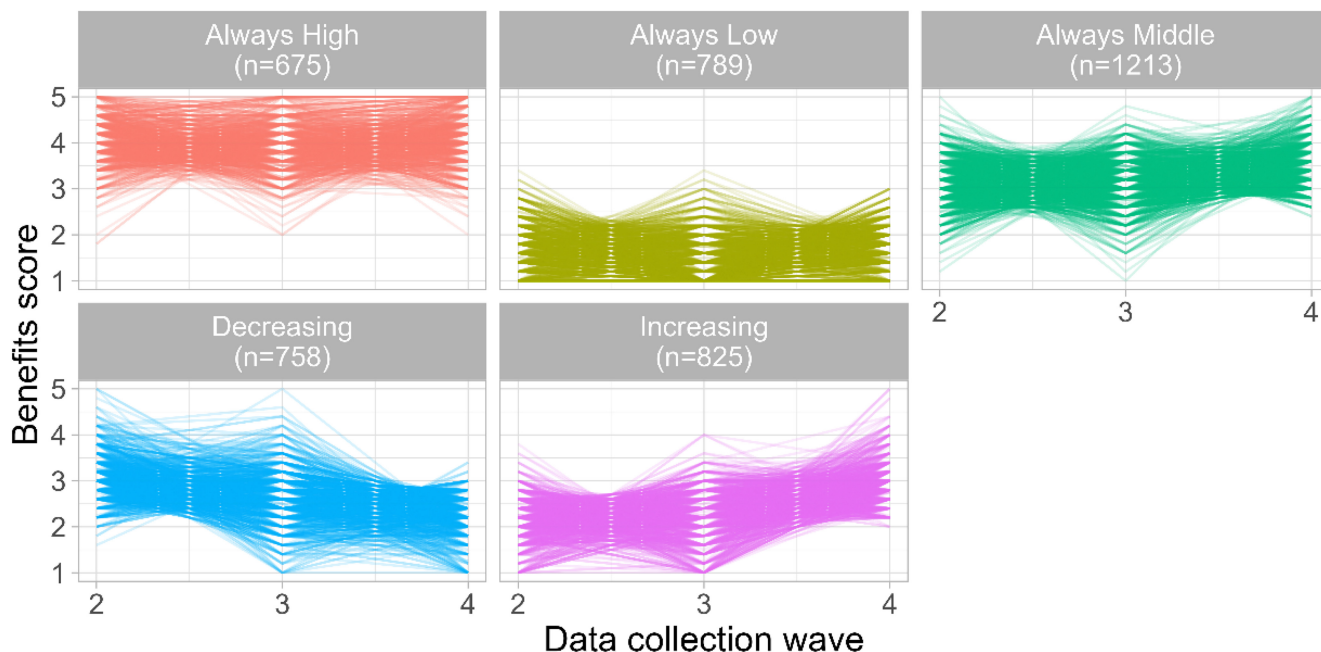
Figure 3

Word Clouds Representing Top Additional Benefits Among Study Participants at Waves 2, 3, and 4

Wave 2 positive benefits (*n*=490)   **Wave 3 positive benefits (*n*=262)**   **Wave 4 positive benefits (*n*=308)**

Note. See the online article for the color version of this figure.

Figure 4

Clusters of Benefit Finding (n = 4,260)

Note. See the online article for the color version of this figure.

Relative to Whites, those identifying as Black or Hispanic were more likely to be in the always high, always middle, and decreasing benefits clusters. Those experiencing fewer secondary stressors at W2 were more likely to be in the always low cluster compared with the always high, always middle, and decreasing clusters ($ps < .001$). See SF2 and Table S5 in the online supplemental materials for full results.

Trajectories of Benefit Finding and Psychological Distress Over Time

Next, we examined whether psychological distress (emotional exhaustion, functional impairment, global distress, and traumatic stress) shifted over time as a function of benefit cluster membership. See Figure 5 for descriptive plots of these analyses. Emotional exhaustion decreased over time ($b = -0.08$, $SE = 0.01$, $p < .001$) across the sample, and the benefit cluster interacted significantly with the data collection wave (i.e., time) on emotional exhaustion. The simple slopes of each cluster revealed most clusters decreased in emotional exhaustion over time; the decreasing ($b = -0.01$, $SE = 0.01$, $p = .13$) and always low ($b = 0.01$, $SE = 0.01$, $p = .15$) benefit clusters remained relatively stable in emotional exhaustion over time. Functional impairment significantly decreased over time ($b = -0.04$, $SE = 0.01$, $p = .01$); there was no interaction between cluster and data collection wave so this trend did not differ significantly between clusters. Simple slopes analyses ascertained whether cluster-specific trends were significantly different from zero. Here again, most clusters decreased in functional impairment over time, although the simple slopes for always low and increasing benefit clusters were nonsignificant ($ps > .01$). Global distress decreased over time ($b = -0.02$, $SE = 0.01$, $p = .007$), primarily driven by the always high and always middle clusters: the other clusters showed no change in global distress

over time (all $p > .01$). Finally, traumatic stress decreased across waves ($b = -0.17$, $SE = 0.01$, $p < .001$). Traumatic stress decreased over time across all clusters, yet declined least among individuals in the always low ($b = -0.12$, $SE = 0.01$, $p < .001$) and increasing benefit ($b = -0.12$, $SE = 0.01$, $p < .001$) clusters.

Benefit Finding and Health Protective Behaviors

Analysis revealed finding benefits correlated with greater frequency of social distancing and mask wearing at W2 (see Table 1) and COVID-19 and flu vaccine behavior at W3 (see Table 2). In each model, controlling for prepandemic mental health, demographics, collective, and individual-level stressors, benefit finding was one of the strongest correlates of engaging in health protective behaviors.

As an exploratory aim, we also ran a k-means clustering analysis for health behaviors over time. We identified three clusters: high engagement (respondents engaging in all health behaviors more than average); low engagement (respondents engaging in behaviors less than average); and average engagement (respondents engaging in behaviors about average; see Figure S1 in the online supplemental materials). These three clusters were highly associated with benefit trajectories, $\chi^2(8) = 290.42$, $p < .001$.

Discussion

Using a representative, probability-based sample of U.S. residents, results document that benefit finding commonly occurred throughout an era of collective stress in the United States. Despite inconsistent relationships between benefit finding and psychological distress, benefit finding was consistently and robustly associated with engagement in health protective behaviors during the pandemic. Indeed, benefit finding exhibited larger beta coefficients

Figure 5

Trajectories of Emotional Exhaustion, Functional Impairment, Global Distress, and Traumatic Stress Across Waves by Benefit Finding Clusters
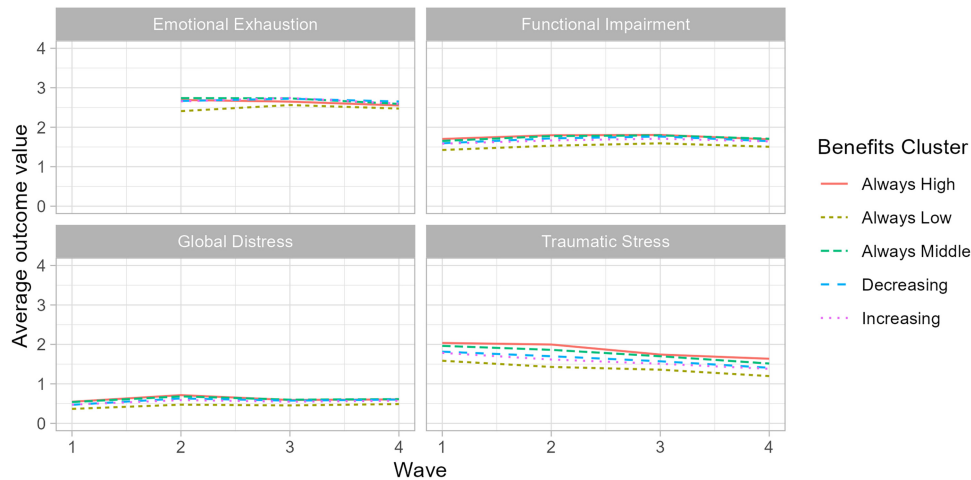
Note. Data in these plots are descriptive; Wave 1 ($N = 6,514$) is visible here but was not included in multilevel models; Wave 2, $N = 5,661$; Wave 3, $N = 4,881$; and Wave 4, $N = 4,859$. See the online article for the color version of this figure.

and odds ratios relative to most other indicator variables in the model, highlighting the relative importance of this cognitive coping construct. Thus, although benefit finding did not consistently mitigate psychological distress, it may have provided a cognitive resource to help sustain engagement in adaptive behavior during a period of protracted stress. These adaptive behaviors may signal effective management of chronic stress demands, in response to or despite experiencing concurrent distress.

Quantitative results representing frequencies of benefit finding are enriched by qualitative results via a word cloud illustration of free

Table 1

Multiple Regression Analyses Depicting the Relationships Between Benefit Finding and Frequency of Performing Health Protective Behaviors During the Early Phase of COVID-19, Wave 2 (September 26, 2020–October 16, 2020)

Variable	Social distancing ($N = 5,535$)[a]					Mask wearing ($N = 5,517$)[a]				
	b	95% CI		β	p	b	95% CI		β	p
Benefit finding (W2)	**0.27**	**0.22**	**0.31**	**.24**	**<.001**	**0.16**	**0.12**	**0.20**	**.18**	**<.001**
Age	**0.003**	**0.001**	**0.01**	**.05**	**.005**	0.002	0.0002	0.004	.05	.025
Female gender[b]	**0.11**	**0.04**	**0.18**	**.06**	**.002**	**0.13**	**0.07**	**0.20**	**.08**	**<.001**
College educated[c]	**0.16**	**0.09**	**0.22**	**.07**	**<.001**	0.06	0.004	0.11	.03	.033
Income	−0.002	−0.01	0.01	−.01	.636	**0.01**	**0.01**	**0.02**	**.07**	**.001**
Ethnicity/race[d]										
Black, non-Hispanic	−0.13	−0.26	−0.01	−.04	.044	0.06	−0.05	0.18	.02	.287
Other/2+ races, non Hispanic	**0.16**	**0.05**	**0.28**	**.04**	**.005**	0.09	0.001	0.18	.03	.047
Hispanic	−0.01	−0.14	0.11	−.01	.827	0.06	−0.05	0.17	.02	.321
Political party identification[e]	**−0.15**	**−0.16**	**−0.13**	**−.29**	**<.001**	**−0.11**	**−0.12**	**−0.09**	**−.26**	**<.001**
Prepandemic mental health[f]	0.06	−0.04	0.16	.02	.265	0.04	−0.04	0.12	.02	.334
Secondary stressors (W1)	0.04	0.001	0.07	.04	.046	0.02	−0.01	0.06	.03	.196
Community stressors (W1)	−0.01	−0.04	0.02	−.01	.474	0.02	0.006	0.04	.03	.134
Financial stressors (W2)	0.03	−0.01	0.06	.03	.146	−0.01	−0.05	0.02	−.01	.423
Secondary stressors (W2)	**0.06**	**0.04**	**0.09**	**.08**	**<.001**	0.02	0.004	0.05	.04	.019
Personal COVID-19 illness (W2)	**−0.31**	**−0.48**	**−0.14**	**−.06**	**<.001**	**−0.34**	**−0.56**	**−0.12**	**−.09**	**.002**
Lifetime individual-level stressors (W2)	0.003	−0.01	0.02	.01	.757	−0.01	−0.02	0.01	−.02	.316
Constant	2.89	2.66	3.13	—	<.001	**3.98**	**3.76**	**4.20**	**—**	**<.001**
Model statistics	$F(16, 5518) = 47.61$, $p < .001$, $R^2 = .22$					$F(16, 5500) = 29.04$, $p < .001$, $R^2 = .17$				

Note. In supplemental analyses, both global distress, as well as a count score of physical health ailments, were included in the models. Both were statistically significant but did not substantially attenuate the other relationships and are not presented in the final models. CI = confidence interval; W1 = Wave 1; W2 = Wave 2. $p < .01$ indicated in bold.
[a] *N*s vary due to missing data, which was accounted for in the weighting procedure.   [b] *Female* = 1; *male* = 0.   [c] *Bachelor's degree or higher* = 1, *less than bachelor's degree* = 0.   [d] *White* = 0 (reference group).   [e] *Strong Democrat* = 1; *strong Republican* = 7.   [f] *Prior anxiety, depression, or any other emotional, nervous, or psychiatric diagnosis* = 1; *no prior diagnosis* = 0.

Table 2

Multiple Regression Analyses Depicting the Relationships Between Benefit Finding and COVID-19 and Flu Vaccination, Wave 3 (November 8, 2021–November 24, 2021)

Variable	COVID-19 vaccination ($N = 4,744$)[a]				Flu vaccination ($N = 4,748$)[a]			
	OR	95% CI		*p*	*OR*	95% CI		*p*
Benefit finding (W3)	**1.23**	**1.08**	**1.39**	**.001**	**1.29**	**1.18**	**1.42**	**<.001**
Age	**1.02**	**1.02**	**1.04**	**<.001**	**1.03**	**1.03**	**1.04**	**<.001**
Female gender[b]	**0.70**	**0.55**	**0.88**	**.003**	0.90	0.75	1.07	.220
College educated[c]	**1.95**	**1.54**	**2.47**	**<.001**	**1.33**	**1.11**	**1.60**	**.002**
Income	**1.06**	**1.03**	**1.10**	**<.001**	**1.03**	**1.01**	**1.06**	**.008**
Ethnicity/race[d]								
Black, non-Hispanic	0.58	0.37	0.92	.021	**0.54**	**0.39**	**0.75**	**<.001**
Other/2+ races, non-Hispanic	0.94	0.65	1.35	.732	1.17	0.86	1.59	.301
Hispanic	0.77	0.53	1.10	.154	0.84	0.61	1.14	.261
Political party identification[e]	**0.63**	**0.58**	**0.67**	**<.001**	**0.82**	**0.78**	**0.86**	**<.001**
Prepandemic mental health[f]	1.28	0.93	1.76	.123	1.10	0.87	1.41	.404
Secondary stressors (W1)	**1.21**	**1.08**	**1.34**	**.001**	1.06	0.97	1.16	.193
Community stressors (W1)	1.03	0.95	1.13	.402	1.04	0.96	1.12	.335
Financial stressors (W3)	**0.84**	**0.76**	**0.93**	**.001**	**0.87**	**0.79**	**0.96**	**.006**
Secondary stressors (W3)	1.00	0.88	1.14	.972	0.93	0.84	1.03	.162
Personal COVID-19 illness (W3)	**0.37**	**0.29**	**0.47**	**<.001**	**0.63**	**0.50**	**0.79**	**<.001**
Lifetime individual-level stressors (W3)	**0.92**	**0.87**	**0.96**	**.001**	**0.95**	**0.92**	**0.99**	**.008**
Constant	2.55	1.22	5.32	.013	**0.12**	**0.06**	**0.24**	**<.001**
Model statistics	Wald $\chi^2(16) = 404.98$, $p < .001$, Pseudo $R^2 = .23$				Wald $\chi^2(16) = 339.10$, $p < .001$, Pseudo $R^2 = .12$			

Note. In supplemental analyses, both global distress, as well as a count score of physical health ailments, were included in the models. Both were statistically significant but did not substantially attenuate the other relationships and are not presented in the final models. *OR* = odds ratio; CI = confidence interval; W1 = Wave 1; W3 = Wave 3; $p < .01$ indicated in bold.
[a] *N*s vary due to missing data, accounted for in the weighted procedure. [b] *Female = 1; male = 0.* [c] *Bachelor's degree or higher = 1, less than bachelor's degree = 0.* [d] *White person = 0 (reference group).* [e] *Strong Democrat = 1; strong Republican = 7.* [f] *Prior anxiety, depression, or any other emotional, nervous, or psychiatric diagnosis = 1; no prior diagnosis = 0.*

responses over time. This improves on prior work presenting only quantitative (Cox et al., 2021; Miao et al., 2022; Yang et al., 2021) or qualitative (Stanko et al., 2015) results. The qualitative findings presented herein highlight that during the phase of COVID-19 when movement restrictions and social distancing prevailed as intervention strategies, respondents found benefits related to time spent at home with family and friends. As COVID-19 became endemic and other collective stressors emerged (e.g., Ukraine war), respondents emphasized benefits including health, life, time, and faith-related words (e.g., god, prayer, and church). The latter is consistent with work that found positive reframing during adversity and religiosity are correlated (Carver et al., 1993) and with the "broaden and build" theory of positive emotion, whereby attempts at "broadening" mindsets (signified by faith-related words) may signal long-term stress adaptation (Fredrickson, 2002).

Benefit Finding During an Era of Chronic Collective Stress

Average benefit finding remained relatively consistent throughout the 2+ years of data collection. However, trajectories of benefit finding exhibited marked variability along five distinct clusters: always high, always low, always middle, increasing, and decreasing. Trajectories were weak and, similar to prior research with cancer patients (Zhu et al., 2018), inconsistently related to psychological distress. Small effect sizes and low overall means of traumatic stress symptoms suggest trajectories of benefit finding did not correlate with meaningful variability in traumatic stress or other forms of psychological distress. In fact, respondents reported benefit finding that

was largely independent of psychological distress. Trajectories of benefit finding were associated with stress exposure. Notably, those in trajectories indicating higher benefit finding either initially (e.g., the decreasing cluster) or over time (e.g., the always high cluster) tended to report exposure to more secondary stressors early in the pandemic. This suggests benefit finding may have provided a cognitive resource to help people "carry on" during times of stress.

Results from this study improve on the extant literature by capitalizing on a large, longitudinal, probability-based representative sample of U.S. residents who experienced a range of experiences during the COVID-19 pandemic. Importantly, the sample included groups (underrepresented minorities, those from low-income groups) that tend to be underrepresented in survey research (Pierce et al., 2020). This was critical as results demonstrated age, ethnicity/race, and variability in stress exposure were all correlates of benefit finding over time. Our findings align with other research with small (Kowalski et al., 2022) and nonrepresentative samples (Jenkins et al., 2021; Kowalski et al., 2022) showing benefit finding occurred early in the COVID-19 pandemic and was associated with health protective behaviors (Miao et al., 2022). Using a methodologically rigorous approach, we demonstrate benefit finding occurred over time and across a wide swath of the populace.

Findings contrast with other results demonstrating benefit finding to be negatively correlated with psychological distress following a loss (Linley & Joseph, 2004), individual-level trauma (R. L. Silver, 1982), stress (Urcuyo et al., 2005), and acute collective trauma (Updegraff et al., 2008). On balance, benefit finding did not appear to buffer psychological distress during the COVID-19 pandemic. This could be due to the chronic stress of COVID-19 that was

punctuated by additional cascading collective stressors and individual-level adversity (R. C. Silver et al., 2021). Moreover, while many individuals certainly experienced elevated distress (Ettman et al., 2022), on average, across the populace, levels of global distress remained only modestly elevated throughout the pandemic, consistent with reports from other representative samples early in the pandemic (Riehm et al., 2020). This illustrates that despite a time of unprecedented stress, many exhibited marked resilience.

Demographic indicators were associated with variability in benefit finding. Relative to White respondents, respondents of color (Black, Hispanic, or other race) consistently reported significantly more benefit finding. These findings align with studies documenting greater resilience and optimism among people of color than among White people in the United States during the pandemic (Graham et al., 2022). Future research should examine patterns and correlates of benefit finding across different racial and ethnic groups that have experienced discrimination in the United States to better inform agencies charged with supporting these communities during public health crises (Selvanathan et al., 2023).

Similar to prior work on the relationship between other cognitive responses such as world benevolence views and adversity (Poulin & Silver, 2008), women and older respondents reported more benefit finding. As discussed in prior work (see Helgeson et al., 2006), women tend to engage in more positive self-talk and reappraisal compared to men, which may extend to benefit finding. While a prior meta-analysis of benefit finding specifically found younger individuals report more benefit finding (Helgeson et al., 2006), our data suggest that during the era of COVID-19, older age may have provided a steeling effect. Older individuals may have lived through other "unprecedented times" of social upheaval (e.g., war and terrorist attacks). Moreover, many of the restrictions of the pandemic disproportionately impacted younger adults compared to older ones.

Implications for Conceptualizations of Stress-Related Positive Psychological Sequelae

Benefit finding appeared to function as a cognitive resource, despite its association with some distress-related outcomes. This aligns with the coping model of positive psychological sequelae during adversity (Park et al., 1996), which includes perceptions of personal growth and improvement that occur in response to adversity (Tedeschi & Calhoun, 2004). Such positive self-perception may help maintain adaptive, positive behaviors despite ongoing demands from a chronic stressor, similar to actions performed during pregnancy such as taking vitamins and eating healthy foods (Dunkel Schetter, 2011). Health protective behaviors performed during COVID-19, like vaccination, served both a health protective and prosocial function (Betsch et al., 2017). These findings are consistent with work from social psychology suggesting that cognitive processes such as meaning-making may have beneficial effects such as the pursuit of broad goals (Baumeister & Vohs, 2002). Findings also extend the conceptualization of "doing well" during an upsetting event. Distress and positive adaptation can cooccur: benefit finding may function as a cognitive resource to persevere despite distress.

Limitations and Future Directions

Although we were able to assess a nationally representative, probability-based sample of U.S. residents and follow them over time during a period of ongoing social disruption, our study was not without limitations. We did not assess ruminative processes associated with benefit finding, which are correlated with distress (Park, 2010) and may further explain trajectory variability. Benefit finding and behavioral outcomes may have reciprocal effects, where engaging in adaptive behaviors instigates or maintains adaptive cognitive processes. Constructs representing individual differences (e.g., religiosity, control, positive reappraisal, and emotion regulation) could further explain variability in trajectories and outcomes (Carver et al., 1993; Urcuyo et al., 2005). While we evaluated open-ended as well as closed-ended responses, our closed-ended questions were somewhat limited in scope. We also used a count score for stressors. Future research should explore variations in the intensity of different stressors (e.g., hospitalization) that may be associated with psychological and behavioral outcomes.

Our prospectively measured indicators of mental health diagnoses were self-reported physician-diagnosed disorders, which may undercount emotionally challenged individuals lacking healthcare access. To reduce participant burden, we used an abbreviated, psychometrically sound measure of global distress. We assessed traumatic stress responses to the Ukraine war, but not other contemporary stressors (e.g., mass shootings). We acknowledge that benefit finding is a component of posttraumatic growth (PTG), which we did not comprehensively assess. However, given the high correlations between PTG and finding benefits (Applebaum et al., 2021), such information may not have yielded greater insights. Yet, since PTG can develop years after a trauma (Calhoun & Tedeschi, 1998), there may be individuals who experienced or will experience growth at a subsequent unmeasured timepoint. Similarly, we did not assess resilience, which may be related to benefit finding. Some of our outcome variables (e.g., functional impairment) were positively skewed, potentially diluting the strength of our findings. Finally, it is possible that assessing multiple dependent variables could have led to increased Type 1 error. However, we believe that preregistering our analyses and applying a more stringent α (.01) to our interpretation of statistical significance helped balance the potential for Type 1 errors without overinflating Type 2 errors.

Given the robust association between benefit finding and health protective behaviors, encouraging such cognitive processes to promote public health could be a fruitful area for future research. Public health messaging leveraging benefit finding could inspire action and motivate adaptive behavior. Our results were robust even after accounting for the relationship between political party identification and health behaviors, suggesting a potential broad appeal of such messaging. Future work should also explore if benefit finding encourages adaptive behavior during other chronic collective stressors and test whether positive psychology interventions (see van Agteren et al., 2021) could increase these effects.

Conclusions

Our results suggest that finding benefits related to collective stress can occur distinct from psychological distress. We found marked variability in trajectories of benefit finding over time, which was associated with early exposure to pandemic-related secondary stressors. Although finding silver linings did not negate the distress associated with exposure to collective stressors, it appeared to represent a cognitive process associated with behaviors that may help build resilience to public health threats. The insights drawn from this work advances our understanding of adaptation to stress, suggesting positive adaptation can occur in parallel with social and

psychological disruption. Rather than pathologizing normal responses to adverse experiences, we suggest directing future attention to behavioral strategies that may benefit individuals and their communities, even during times of great difficulty.

Resumen

Objetivo: Durante la pandemia de COVID-19, factores estresantes colectivos sin precedentes alteraron las asunciones de seguridad y protección. Las estrategias cognitivas, como encontrar beneficios durante la adversidad, pueden facilitar el afrontamiento en momentos de alteración social al reducir la angustia o motivar conductas protectoras de la salud. ***Métodos:*** Exploramos las relaciones entre la búsqueda de beneficios, la exposición a la adversidad a nivel colectivo e individual, la angustia psicológica y las conductas de protección de la salud utilizando cuatro oleadas de datos recopilados durante la era COVID-19 de una muestra longitudinal del panel "NORC AmeriSpeak," un representante, panel en línea basado en probabilidades de residentes de EE. UU.: Oleada 1 ($N =$ 6,514, 3/18/2020–4/18/2020, tasa de finalización del 58.5%); Ola 2 ($N = 5,661$, 9/24/2020–10/16/2020, tasa de finalización del 87.1%); Oleada 3 ($N = 4,881$, 11/8/2021–11/24/2021, tasa de finalización del 75.3%); y Oleada 4 ($N = 4,859$, 5/19/2022–6/16/2022, tasa de finalización del 75.1%). ***Resultados:*** La búsqueda de beneficios fue común; la agrupación de k-medias (un enfoque exploratorio basado en datos) produjo cinco trayectorias: Siempre Alta (15.85%), Siempre Baja (18.52%), Siempre Media (28.47%), Creciente (17.79%) y Decreciente (19.37%). Las trayectorias de búsqueda de beneficios generalmente no tuvieron correlatos fuertes con el agotamiento emocional, los síntomas de estrés traumático, la angustia global y el deterioro funcional a lo largo del tiempo. Más bien, el hallazgo de beneficios está fuertemente correlacionado con comportamientos de protección de la salud relevantes para el COVID-19 y otra amenaza viral (la gripe estacional). Al ajustar por datos demográficos, salud mental prepandémica y adversidad a nivel colectivo e individual, el hallazgo de beneficios se asoció positivamente con un mayor distanciamiento social ($\beta = .25$, $p < .001$) y uso de mascarillas ($\beta = .18$, $p < .001$) en la Ola 2 y mayor vacunación contra COVID-19 ($OR = 1.23$, $p < .001$) y gripe ($OR = 1.29$, $p < .001$) en la Ola 3. ***Conclusiones:*** Aunque el hallazgo de beneficios no se asoció generalmente con una menor angustia psicológica durante un estresor colectivo, se correlacionó con la participación en conductas protectoras de la salud relacionadas con el estresor.

References

Ahmed, H., Naik, G., Willoughby, H., & Edwards, A. G. K. (2012). Communicating risk. *BMJ*, *344*, Article e3996. https://doi.org/10.1136/bmj.e3996

Applebaum, A. J., Marziliano, A., Schofield, E., Breitbart, W., & Rosenfeld, B. (2021). Measuring positive psychosocial sequelae in patients with advanced cancer. *Psychological Trauma: Theory, Research, Practice, and Policy*, *13*(6), 703–712. https://doi.org/10.1037/tra0000944

Baumeister, R. F., & Vohs, K. D. (2002). The pursuit of meaning in life. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 608–618). Oxford University Press.

Bell, M. L., Fairclough, D. L., Fiero, M. H., & Butow, P. N. (2016). Handling missing items in the Hospital Anxiety and Depression Scale (HADS): A simulation study. *BMC Research Notes*, *9*, Article 479. https://doi.org/10.1186/s13104-016-2284-z

Betsch, C., Böhm, R., Korn, L., & Holtmann, C. (2017). On the benefits of explaining herd immunity in vaccine advocacy. *Nature Human Behaviour*, *1*(3), Article 0056. https://doi.org/10.1038/s41562-017-0056

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *The American Psychologist*, *59*(1), 20–28. https://doi.org/10.1037/0003-066X.59.1.20

Bryant, R. A. (2016). *Acute Stress Disorder: What it is and how to treat it*. Guilford.

Calhoun, L. G., & Tedeschi, R. G. (1998). Beyond recovery from trauma: Implications for clinical practice and research. *Journal of Social Issues*, *54*(2), 357–371. https://doi.org/10.1111/josi.1998.54.issue-2

Carver, C. S., Pozo, C., Harris, S. D., Noriega, V., Scheier, M. F., Robinson, D. S., Ketcham, A. S., Moffat, F. L., & Clark, K. C. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology*, *65*(2), 375–390. https://doi.org/10.1037/0022-3514.65.2.375

CDC. (2023). *CDC Museum COVID-19 timeline*. Centers for Disease Control and Prevention. https://www.cdc.gov/museum/timeline/covid19.html

Cénat, J. M., Blais-Rochette, C., Kokou-Kpolou, C. K., Noorishad, P. G., Mukunzi, J. N., McIntee, S. E., Dalexis, R. D., Goulet, M. A., & Labelle, R. P. (2021). Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: A systematic review and meta-analysis. *Psychiatry Research*, *295*, Article 113599. https://doi.org/10.1016/j.psychres.2020.113599

Consedine, N. S., & Moskowitz, J. T. (2007). The role of discrete emotions in health outcomes: A critical review. *Applied and Preventive Psychology*, *12*(2), 59–75. https://doi.org/10.1016/j.appsy.2007.09.001

Cox, C. R., Swets, J. A., Gully, B., Xiao, J., & Yraguen, M. (2021). Death concerns, benefit-finding, and well-being during the COVID-19 pandemic. *Frontiers in Psychology*, *12*, Article 648609. https://doi.org/10.3389/fpsyg.2021.648609

Davis, C. G., Wortman, C. B., Lehman, D. R., & Silver, R. C. (2000). Searching for meaning in loss: Are clinical assumptions correct? *Death Studies*, *24*(6), 497–540. https://doi.org/10.1080/07481180050121471

Derogatis, L. R. (2001). *BSI-18: Administration, scoring, and procedures manual*. NCS Assessments.

Dunkel Schetter, C. (2011). Psychological science on pregnancy: Stress processes, biopsychosocial models, and emerging research issues. *Annual Review of Psychology*, *62*(1), 531–558. https://doi.org/10.1146/annurev.psych.031809.130727

Dunkel Schetter, C., & Dolbier, C. (2011). Resilience in the context of chronic stress and health in adults. *Social and Personality Psychology Compass*, *5*(9), 634–652. https://doi.org/10.1111/j.1751-9004.2011.00379.x

Ettman, C. K., Cohen, G. H., Abdalla, S. M., Sampson, L., Trinquart, L., Castrucci, B. C., Bork, R. H., Clark, M. A., Wilson, I., Vivier, P. M., & Galea, S. (2022). Persistent depressive symptoms during COVID-19: A national, population-representative, longitudinal study of U.S. adults. *The Lancet Regional Health - Americas*, *5*, Article 100091. https://doi.org/10.1016/j.lana.2021.100091

Fredrickson, B. L. (2002). How does religion benefit health and well-being? Are positive emotions active ingredients? *Psychological Inquiry*, *13*(3), 209–213. https://www.jstor.org/stable/1449332

Garfin, D. R., Djokovic, L., Silver, R. C., & Holman, E. A. (2022). Acute stress, worry, and impairment in healthcare and non-healthcare essential workers during the COVID-19 pandemic. *Psychological Trauma: Theory, Research, Practice, and Policy*, *14*(8), 1304–1313. https://doi.org/10.1037/tra0001224

Garfin, D. R., Fischhoff, B., Holman, E. A., & Silver, R. C. (2021). Risk perceptions and health behaviors as COVID-19 emerged in the United States: Results from a probability-based nationally representative sample. *Journal of Experimental Psychology: Applied*, *27*(4), 584–598. https://doi.org/10.1037/xap0000374

Garfin, D. R., Holman, E. A., Fischhoff, B., Wong-Parodi, G., & Silver, R. C. (2022). Media exposure, risk perceptions, and fear: Americans' behavioral responses to the Ebola public health crisis. *International Journal of Disaster Risk Reduction*, *77*, Article 103059. https://doi.org/10.1016/j.ijdrr.2022.103059

Garfin, D. R., Jones, N. M., Holman, E. A., & Silver, R. C. (2022). *Finding benefits during chronic cascading collective stressors*. https://doi.org/10.17605/OSF.IO/E5XSQ

Garfin, D. R., Thompson, R. R., Holman, E. A., Wong-Parodi, G., & Silver, R. C. (2022). Association between repeated exposure to hurricanes and mental health in a representative sample of Florida residents. *JAMA Network Open*, *5*(6), Article e2217251. https://doi.org/10.1001/jamanetworkopen.2022.17251

Garfin, D. R., Thompson, R. R., & Wong-Parodi, G. (2023). Media exposure, threat processing, and mitigation behaviors in Gulf Coast residents facing the co-occurring threats of COVID-19 and hurricanes. *Risk Analysis*, *43*(7), 1370–1386. https://doi.org/10.1111/risa.14032

Graham, C., Chun, Y., Hamilton, B., Roll, S., Ross, W., & Grinstein-Weiss, M. (2022). Coping with COVID-19: Differences in hope, resilience, and mental well-being across U.S. racial groups. *PLoS ONE*, *17*(5), Article e0267583. https://doi.org/10.1371/journal.pone.0267583

Harper, C. A., Satchell, L. P., Fido, D., & Latzman, R. D. (2020). Functional fear predicts public health compliance in the COVID-19 pandemic. *International Journal of Mental Health and Addiction*, *19*(5), 1875–1888. https://doi.org/10.1007/s11469-020-00281-5

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology*, *74*(5), 797–816. https://doi.org/10.1037/0022-006X.74.5.797

Holman, E. A., Garfin, D. R., Lubens, P., & Silver, R. C. (2020). Media exposure to collective trauma, mental health, and functioning: Does it matter what you see? *Clinical Psychological Science*, *8*(1), 111–124. https://doi.org/10.1177/2167702619858300

Holman, E. A., Thompson, R. R., Garfin, D. R., & Silver, R. C. (2020). The unfolding COVID-19 pandemic: A probability-based, nationally representative study of mental health in the U.S. *Science Advances*, *6*(42), Article eabd5390. https://doi.org/10.1126/sciadv.abd5390

Jenkins, M., Hoek, J., Jenkin, G., Gendall, P., Stanley, J., Beaglehole, B., Bell, C., Rapsey, C., & Every-Palmer, S. (2021). Silver linings of the COVID-19 lockdown in New Zealand. *PLoS ONE*, *16*(4), Article e0249678. https://doi.org/10.1371/JOURNAL.PONE.0249678

Jones, N. M., Thompson, R. R., Holman, E. A., & Silver, R. C. (2023). Idiosyncratic media exposures during a pandemic and their link to well-being, cognition, and behavior over time. *Proceedings of the National Academy of Sciences*, *120*(26), Article e2304550120. https://doi.org/10.1073/pnas.2304550120

Kassambra, A., & Mundt, F. (2020). *factoextra: Extract and visualize the results of multivariate data analyses*. (R package Version 1.0.7) [Computer software].

Kessler, R. C., McLaughlin, K. A., Koenen, K. C., Petukhova, M., & Hill, E. D. (2012). The importance of secondary trauma exposure for post-disaster mental disorder. *Epidemiology and Psychiatric Sciences*, *21*(1), 35–45. https://doi.org/10.1017/s2045796011000758

Kowalski, R. M., Carroll, H., & Britt, J. (2022). Finding the silver lining in the COVID-19 crisis. *Journal of Health Psychology*, *27*(6), 1507–1514. https://doi.org/10.1177/1359105321999088

Lang, D., & Chien, G. (2018). *Wordcloud2: Create Word Cloud by "htmlwidget"*. (R Package Version 0.2.1) [Computer software]. https://cran.r-project.org/package=wordcloud2

Lehman, D. R., Wortman, C. B., & Williams, A. F. (1987). Long-term effects of losing a spouse or child in a motor vehicle crash. *Journal of Personality and Social Psychology*, *52*(1), 218–231. https://doi.org/10.1037/0022-3514.52.1.218

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, *17*(1), 11–21. https://doi.org/10.1023/B:JOTS.0000014671.27856.7e

Maffly-Kipp, J., Flanagan, P., Kim, J., Rivera, G., Friedman, M. D., Vess, M., & Hicks, J. A. (2021). Meaning-making, psychological distress, and the experience of meaning in life following a natural disaster. *Social Psychological and Personality Science*, *12*(5), 812–820. https://doi.org/10.1177/1948550620942688

Miao, M., Zheng, L., Wen, J., Jin, S., & Gan, Y. (2022). Coping with coronavirus disease 2019: Relationships between coping strategies, benefit finding and well-being. *Stress and Health*, *38*(1), 47–56. https://doi.org/10.1002/smi.3072

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin*, *136*(2), 257–301. https://doi.org/10.1037/a0018301

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, *64*(1), 71–105. https://doi.org/10.1111/j.1467-6494.1996.tb00815.x

Park, C. L., Wilt, J. A., Russell, B. S., & Fendrich, M. (2022). Does perceived post-traumatic growth predict better psychological adjustment during the COVID-19 pandemic? Results from a national longitudinal survey in the USA. *Journal of Psychiatric Research*, *146*(February), 179–185. https://doi.org/10.1016/j.jpsychires.2021.12.040

Pierce, M., McManus, S., Jessop, C., John, A., Hotopf, M., Ford, T., Hatch, S., Wessely, S., & Abel, K. M. (2020). Says who? The significance of sampling in mental health surveys during COVID-19. *The Lancet Psychiatry*, *7*(7), 567–568. https://doi.org/10.1016/S2215-0366(20)30237-6

Pietrzak, R. H., Tsai, J., & Southwick, S. M. (2021). Association of symptoms of posttraumatic stress disorder with posttraumatic psychological growth among US veterans during the COVID-19 pandemic. *JAMA Network Open*, *4*(4), Article e214972. https://doi.org/10.1001/jamanetworkopen.2021.4972

Poulin, M., & Silver, R. C. (2008). World benevolence beliefs and well-being across the life span. *Psychology and Aging*, *23*(1), 13–23. https://doi.org/10.1037/0882-7974.23.1.13

Prins, A., Bovin, M. J., Smolenski, D. J., Marx, B. P., Kimerling, R., Jenkins-Guarnieri, M. A., Kaloupek, D. G., Schnurr, P. P., Kaiser, A. P., Leyva, Y. E., & Tiet, Q. Q. (2016). The Primary Care PTSD Screen for *DSM*-5 (PC-PTSD-5): Development and evaluation within a veteran primary care sample. *Journal of General Internal Medicine*, *31*(10), 1206–1211. https://doi.org/10.1007/s11606-016-3703-5

Rankin, K., & Sweeny, K. (2022). Preparing silver linings for a cloudy day: The consequences of preemptive benefit finding. *Personality and Social Psychology Bulletin*, *48*(8), 1255–1268. https://doi.org/10.1177/01461672211037863

R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. https://www.r-project.org

Reinders Folmer, C. P., Brownlee, M. A., Fine, A. D., Kooistra, E. B., Kuiper, M. E., Olthuis, E. H., de Bruijn, A. L., & Van Rooij, B. (2021). Social distancing in America: Understanding long-term adherence to COVID-19 mitigation recommendations. *PLoS ONE*, *16*, Article e0257945. https://doi.org/10.1371/journal.pone.0257945

Riehm, K. E., Holingue, C., Kalb, L. G., Bennett, D., Kapteyn, A., Jiang, Q., Veldhuis, C. B., Johnson, R. M., Fallin, M. D., Kreuter, F., Stuart, E. A., & Thrul, J. (2020). Associations between media exposure and mental distress among U.S. adults at the beginning of the COVID-19 pandemic. *American Journal of Preventive Medicine*, *59*(5), 630–638. https://doi.org/10.1016/j.amepre.2020.06.008

Seery, M. D., Holman, E. A., & Silver, R. C. (2010). Whatever does not kill us: Cumulative lifetime adversity, vulnerability, and resilience. *Journal of Personality and Social Psychology*, *99*(6), 1025–1041. https://doi.org/10.1037/a0021344

Selvanathan, H. P., Jetten, J., & Umeh, A. (2023). A history of collective resilience and collective victimhood: Two sides of the same coin that explain Black Americans' present-day responses to oppression. *British Journal of Social Psychology*, *62*(1), 136–160. https://doi.org/10.1111/bjso.12562

Silver, R. L. (1982). *Coping with an undesirable life event: A study of early reactions to physical disability* [Unpublished dissertation]. Northwestern University.

Silver, R. C., Holman, E. A., & Garfin, D. R. (2021). Coping with cascading collective traumas in the United States. *Nature Human Behaviour*, *5*(1), 4–6. https://doi.org/10.1038/s41562-020-00981-x

Silver, R. C., & Updegraff, J. A. (2013). Searching for and finding meaning following personal and collective traumas. In K. D. Markman, T. Proulx, & M. J. Lindberg (Eds.), *The psychology of meaning* (pp. 237–255). American Psychological Association. https://doi.org/10.1037/14040-012

Silver, R. L., Boon, C., & Stones, M. H. (1983). Searching for meaning in misfortune: Making sense of incest. *Journal of Social Issues*, *39*(2), 81–101. https://doi.org/10.1111/j.1540-4560.1983.tb00142.x

Stanko, K. E., Cherry, K. E., Ryker, K. S., Mughal, F., Marks, L. D., Brown, J. S., & Gendusa, P. F. (2015). Looking for the silver lining: Benefit finding after Hurricanes Katrina and Rita in middle-aged, older, and oldest-old adults. *Current Psychology*, *34*(3), 564–575. https://doi.org/10.1007/s12144-015-9366-2

Su, Z., McDonnell, D., Cheshmehzangi, A., Bentley, B. L., Ahmad, J., Šegalo, S., da Veiga, C. P., & Xiang, Y. T. (2023). Media-induced war trauma amid conflicts in Ukraine. *Perspectives on Psychological Science*, *18*(4), 908–911. https://doi.org/10.1177/17456916221109609

Sweeting, J. A., Garfin, D. R., Holman, E. A., & Silver, R. C. (2020). Associations between exposure to childhood bullying and abuse and adulthood outcomes in a representative national U.S. sample. *Child Abuse & Neglect*, *101*, Article 104048. https://doi.org/10.1016/j.chiabu.2019.104048

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, *15*(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01

Thompson, R. R., Jones, N. M., Freeman, A. M., Holman, E. A., Garfin, D. R., & Silver, R. C. (2022). Psychological responses to U.S. statewide restrictions and COVID-19 exposures: A longitudinal study. *Health Psychology*, *41*(11), 817–825. https://doi.org/10.1037/hea0001233

Thompson, R. R., Jones, N. M., Garfin, D. R., Holman, E. A., & Silver, R. C. (2024). Contrasting objective and perceived risk: Predicting COVID-19 health behaviors in a nationally representative U.S. sample. *Annals of Behavioral Medicine*, *58*(4), 242–252. https://doi.org/10.1093/abm/kaad055

Updegraff, J. A., Silver, R. C., & Holman, E. A. (2008). Searching for and finding meaning in collective trauma: Results from a national longitudinal study of the 9/11 terrorist attacks. *Journal of Personality and Social Psychology*, *95*(3), 709–722. https://doi.org/10.1037/0022-3514.95.3.709

Urcuyo, K. R., Boyers, A. E., Carver, C. S., & Antoni, M. H. (2005). Finding benefit in breast cancer: Relations with personality, coping, and concurrent well-being. *Psychology and Health*, *20*(2), 175–192. https://doi.org/10.1080/08870440512331317634

van Agteren, J., Iasiello, M., Lo, L., Bartholomaeus, J., Kopsaftis, Z., Carey, M., & Kyrios, M. (2021). A systematic review and meta-analysis of psychological interventions to improve mental wellbeing. *Nature Human Behaviour*, *5*(5), 631–652. https://doi.org/10.1038/s41562-021-01093-w

Viswanath, K., Bekalu, M., Dhawan, D., Pinnamaneni, R., Lang, J., & Mcloud, R. (2021). Individual and social determinants of COVID-19 vaccine uptake. *BMC Public Health*, *21*(1), Article 818. https://doi.org/10.1186/s12889-021-10862-1

Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Medical Care*, *30*(6), 473–483. https://doi.org/10.1097/00005650-199206000-00002

Wood, M. D., Foran, H. M., & Britt, T. W. (2023). Limitations of benefit finding as a coping mechanism for combat-related PTSD symptoms. *Military Psychology*, *35*(3), 233–244. https://doi.org/10.1080/08995605.2022.2112884

Yang, Z., Ji, L., Yang, Y., Wang, Y., Zhu, L., & Cai, H. (2021). Meaning making helps cope with COVID-19: A longitudinal study. *Personality and Individual Differences*, *174*(May), Article 110670. https://doi.org/10.1016/j.paid.2021.110670

Zhu, L., Ranchor, A. V., Helgeson, V. S., van der Lee, M., Garssen, B., Stewart, R. E., Sanderman, R., & Schroevers, M. J. (2018). Benefit finding trajectories in cancer patients receiving psychological care: Predictors and relations to depressive and anxiety symptoms. *British Journal of Health Psychology*, *23*(2), 238–252. https://doi.org/10.1111/bjhp.12283