Resource loss and mental health during COVID-19: Psychosocial protective factors among U.S. older adults and those with chronic disease

Stacey E. McElroy-Heltzel[1] , **Laura R. Shannonhouse[2], Edward B. Davis[3], Austin W. Lemke[3], Mary Chase Mize[2], Jamie Aten[3], Matthew C. Fullen[4], Joshua N. Hook[5], Daryl R. Van Tongeren[6], Don E. Davis[2], and Constantinos Miskis[7]**

[1]Department of Psychological and Quantitative Foundations, University of Iowa, Iowa City, IA, USA

[2]Department of Counseling and Psychological Services, Georgia State University, Atlanta, GA, USA

[3]School of Psychology, Counseling, and Family Therapy, Wheaton College, Chicago, IL, USA

[4]School of Education, Virginia Tech, Blacksburg, VA, USA

[5]Department of Psychology, University of North Texas, Denton, TX, USA

[6]Department of Psychology, Hope College, Holland, MI, USA

[7]Administration for Community Living, US Department of Health and Human Services, Washington, DC, USA

*A*cross the globe, COVID-19 has disproportionately affected the physical and mental health of several vulnerable groups. In a series of two cross-sectional studies conducted April to July 2020, we examined its acute mental health effects on two vulnerable U.S. community samples—home-bound older adults who were at or below the poverty line (Study 1, $N = 293$, $M_{age} = 76.94$, $SD = 8.64$; 75.1% female, 67.9% Black) and adults with chronic disease (Study 2, $N = 322$, $M_{age} = 62.20$, $SD = 12.22$; 46.3% female, 28.3% racial/ethnic minorities). Based on the conservation of resources theory, we hypothesised that pandemic-related resource loss would be associated with greater mental distress, but perceived social support and positive psychological characteristics (trait resilience and optimism) would buffer against this adverse effect. Across both samples of vulnerable adults, pandemic-related resource loss was related to mental distress. Perceived social support was related to lower mental distress but did not consistently buffer the effect of resource loss on mental health. However, in Study 2, both trait resilience and optimism buffered this relationship. Findings are discussed in terms of their implications for the conservation of resources theory.

Keywords: COVID-19; Resource loss; Mental health; Distress; Social support.

The COVID-19 pandemic has ravaged the globe, leading to an unfathomable number of deaths, unparalleled disruption of commerce and an unprecedented crisis of mental health. Though the effects of COVID-19 have been widespread, populations such as older adults and those with chronic health issues are at higher risk for infection and mortality (Richardson et al., 2020). One major strategy for protecting these vulnerable groups

has involved social distancing. Unfortunately, side effects of this strategy have included social isolation and potentially the loss of valued tangible or nontangible resources, such as adequate income, healthcare, companionship or hope. Resulting adverse mental health impacts have been documented in older adults (Gustavsson & Beckman, 2020) and in individuals with chronic health conditions (Pettinicchio et al., 2021).

Conservation of resources (COR) theory (Hobfoll, 1989) offers a framework for understanding the linkages between resource loss and mental health and suggests mechanisms that could help mitigate this impact. The purpose of this series of two studies was to examine whether particular psychosocial resources—social support, trait resilience and trait optimism—might buffer the adverse mental health effect of resource loss. In two cross-sectional studies conducted in the United States during the initial phase of the COVID-19 pandemic, we examined this possibility within two vulnerable populations: home-bound older adults who were majority Black and at or below the poverty line (Study 1) and adults with chronic disease (Study 2).

The adverse effects of resource loss

COR theory is a resource-oriented model of stress and motivation. It posits that: (a) across cultures and contexts, people have a fundamental motivation to build, retain and protect valued resources; (b) the threatened or actual loss of these resources produces stress; and (c) the surplus or gain of these resources produces "eustress" (i.e., mental health/well-being). Within this model, resources include physical objects (e.g., a home), personal characteristics (e.g., trait optimism), conditions (e.g., marriage) and energies (e.g., money). These resources can have both instrumental value (e.g., to meet core needs) and symbolic value (e.g., to help people define who they are; Hobfoll, 1989). In COR theory, resources are linked to stress reactions because they enable people to self-regulate their emotions and behaviours, experience meaningful and rewarding social connections, and define their identities and roles in their social ecology. One core tenet of COR theory is that resource loss has a disproportionately greater adverse impact on people, relative to the positive impact of resource gain. Another tenet is that individuals who possess more resources are less vulnerable to the deleterious effects of resource loss, while those with fewer resources are more vulnerable to such effects.

There is robust cross-sectional and longitudinal evidence supporting COR theory. This evidence has been obtained across a wide variety of countries, contexts and samples. COR theory's predictions have been upheld in several vulnerable populations, including older adults (Schapmire & Faul, 2017) and individuals with chronic disease (Armon et al., 2014). Similarly, its tenets have

been supported in numerous disaster contexts, including natural disasters (e.g., hurricanes; Sattler et al., 2002) and chronic disasters (e.g., long-term drought; Shannonhouse et al., 2019). Research has also identified several resources that can buffer against the adverse mental health effects of resource loss. These protective factors include interpersonal resources, such as perceived social support, and internal resources, such as trait optimism and resilience.

Interpersonal resources

Social support is both a type of condition resource that can be lost and a potential buffer against the effects of other types of resource loss. Social support functions as a buffer by helping individuals protect, build and broaden their resources (Hobfoll, 1989). Social support can function as a safety net when other types of resource loss occur by providing access to resources beyond those possessed by the individual. Family and friends may offer contributions of material goods and/or emotional support that would help maintain one's sense of self-esteem and identity.

Prior studies have documented the protective effects of social support in a variety of samples and contexts. For vulnerable populations such as older adults, social support has been found to promote longevity (Blazer, 2008). In a cross-national sample following Hurricane Georges, perceived social support was inversely related to psychological distress (Sattler et al., 2002). In the context of COVID-19, social support was related to lower levels of depression (Nisar et al., 2021). In sum, it appears that beginning with or maintaining high levels of perceived social support could buffer the effects of other types of resource loss on mental health. Internal resources, such as trait optimism and resilience, may function similarly.

Internal resources

In more recent expansions of COR theory, Hobfoll et al. (2015) have integrated concepts from developmental and positive psychology in an attempt to further explicate how individuals react to resource loss/stress. Trait resilience is perhaps the most studied psychological strength in the context of disaster, trauma or other major life stressors. Simply defined, resilience is "the ability to bounce back or recover from stress" (Smith et al., 2008, p. 194). Hobfoll et al. (2015) further characterise resilience as a characteristic of individuals and communities that can be built or worn down over time depending on the availability and protection of resources (e.g., personal, social, material, energy) which varies across environmental contexts (i.e., communities). Vulnerable populations that have fewer resources prior to disasters are more likely to experience loss spirals, which are more rapid and powerful than gain spirals (Hobfoll

et al., 2015). These compounding losses then serve to undermine resilience building.

At least a couple of studies have examined resource loss and resilience in the context of other slow-moving disasters. In a sample of individuals who experienced the Deepwater Horizon oil spill, participants belonging to a racial/ethnic minority group had lower resilience scores, potentially due to socioeconomic inequality (Lightfoot et al., 2020). Similarly, Ferreira et al. (2018) found that individuals with a history of intimate partner violence had lower resilience in the aftermath of the Deepwater Horizon oil spill than those without a history of intimate partner violence. Together, these findings lend support to Hobfoll et al.'s (2015) suggestion that both preexisting contextual vulnerabilities (i.e., socioeconomic inequality, relational trauma) and disaster-specific stressors combine to attenuate resilience.

Trait optimism, the stable expectation of good outcomes, is another potentially helpful internal resource (Carbone & Echols, 2017). Because it involves expectations about the future, trait optimism is thought to be related to anxiety and depression, both of which involve negative expectations about the future (Conversano et al., 2010). Individuals who are optimistic and have more positive expectations about the future may be less vulnerable to mental distress. For example, in a study on survivors of the April 2011 tornadoes in Mississippi and Alabama, optimism moderated the relationship between home damage and PTSD (Carbone & Echols, 2017). In another sample of participants who survived both Hurricanes Katrina and Rita and the Deepwater Horizon oil spill, optimism was associated with better mental health (Cherry et al., 2017). Finally, in a sample of individuals impacted by the 1999 Kosovo crisis, there was an inverse relationship between optimism and maladjustment (Riolli et al., 2002).

Overview of the current studies and hypotheses

In the present study, we use COR theory to examine how vulnerable populations coped with resource loss due to COVID-19 by drawing upon interpersonal (e.g., social support) and internal resources (e.g., trait resilience and optimism). Prior theory and work have suggested that social support and psychological strengths are both types of resources that can be depleted through disasters. However, Hobfoll et al. (2015) described cycles of gain and loss spirals. This work suggests that individuals who have higher levels of resources prior to the onset of disasters would experience slower trajectories of loss spirals and as a consequence, their mental health would be less impacted. This line of thinking implies that starting out high in resources buffers against the impact of disaster resource loss on mental health. We tested the following three hypotheses:

H1. Pandemic-related resource loss will be related to higher mental distress (depression, anxiety and subjective distress).

H2. Perceived social support (interpersonal resource) will moderate the relationship between resource loss and mental distress, exhibiting a buffering effect.

H3. Trait resilience and optimism (internal psychological resources) will moderate the relationship between resource loss and mental distress, having a buffering effect.

We will examine these hypotheses in a progression of two studies. Although these two studies have similar aims and measure similar constructs, they are not intended as a direct comparison to each other as they were conducted in different populations and included different measures. Indeed, these studies were independently designed and began prior to the onset of COVID-19. We present them as a package because the methodologies utilised the same conceptual framework, have overlap in the general constructs, and provide the ability to test the same set of hypotheses across two distinct vulnerable populations. Demographics and measures for the two studies are summarised in Table 1 for easy comparison.

STUDY 1

Method

Participants and procedures

Participants were 293 community-dwelling older adults (493 initially invited to participate; response rate 59%) in the United States who receive home and community-based services (HCBS). Participants were recruited and agreed to participate in the study via phone call, and those who elected to participate were scheduled an interview. Data were collected via phone interviews (lasting 1–3 hours) from May to early July 2020. All interviews were conducted in English. Participants were compensated $20 for their participation in the interviews. This study was approved by a university institutional review board and six county aging services agencies that organise participant HCBS such as home-delivered meals and caregiver support services. Additional details about the demographic variables are available from the second author upon request.

Measures

Each measure used in Studies 1 and 2 has demonstrated evidence of internal reliability and validity as described in the papers referenced for each measure. For each measure, higher scores reflect higher levels of the construct. Average scores were computed for each measure, and possible ranges of scores are described in Tables 2 and 4.

TABLE 1
Participants and measures for studies 1 and 2

	Study 1	*Study 2*
Participants	Racially diverse sample of home-bound, socioeconomically disadvantaged, older adults, $N = 293$	Nonrandom, nationwide, stratified sample of adults with chronic disease, $N = 322$
Age	$M = 76.94$, $SD = 8.64$, range = 62–101 years old	$M = 62.20$, $SD = 12.22$, range = 19–83 years old
Sex	Male $n = 73$, 24.9%	Male $n = 173$, 53.7%
Race	Black $n = 199$, 67.9%	White $n = 231$, 71.7%
Sexual orientation	Heterosexual $n = 286$, 97.6%	Heterosexual $n = 295$, 91.6%
Marital status	Married or living with a partner $n = 33$, 11.3%	Married $n = 186$, 57.8%
Education	Less than high school $n = 53$, 18.1%; high school or equivalent $n = 83$, 28.3%; college without graduation $n = 73$, 24.9%	Bachelor's degree $n = 100$, 31.1%; Master's degree or higher $n = 94$, 29.2%
Income	~$12,000 per year $n = 136$, 47.9%; >200% of the federal poverty level $n = 17$, 6.0%	~ 20% each falling into the ranges of either $25,000–$49,999, $50,000–$74,999, or $100,000–$149,999
Religion	Christian $n = 256$, 87.4%	Christian $n = 215$, 66.8%
Measures		
Pandemic-related resource loss	19-item version of Sattler's Resource Loss scale	12-item version of the Conservation of Resources–Evaluation
Depression	2-item Patient Health Questionnaire-2 scale	9-item Patient Health Questionnaire
Anxiety	2-item Generalized Anxiety Disorder-2 scale	7-item Generalized Anxiety Disorder-7 scale
Subjective distress	6-item Kessler Distress Scale	10-item Perceived Stress Scale
Perceived social support	6-item variation of the Duke Social Support Index Subjective Support subscale	8-item Medical Outcomes Study Social Support Survey
Trait resilience	n/a	6-item Brief Resilience Scale
Trait optimism	n/a	8-item Life Orientation Test

TABLE 2
Means, standard deviations and intercorrelations for Study 1 variables

Variable	*1*	*2*	*3*	*4*	*5*
1. Pandemic-related resource loss	(.90)				
2. Depression symptoms	**.32**	(.81)			
3. Anxiety symptoms	**.34**	**.73**	(.82)		
4. Subjective distress	**.35**	**.74**	**.73**	(.89)	
5. Perceived social support	−.16	**−.35**	**−.38**	**−.43**	(.86)
M	1.57	0.64	0.72	1.03	2.57
SD	0.56	0.84	0.88	1.02	0.51
Possible range	0–4	0–3	0–3	1–5	1–3

Note: $N = 293$. Coefficient alphas are presented in parentheses along the diagonal. All correlations that are significant at $p < .001$ are indicated in bold.

Pandemic-related resource loss. Resource loss related to COVID-19 was measured using an adapted 19-item version of Sattler's Resource Loss scale (Sattler et al., 2002). Participants were asked, "To what extent have you experienced loss of the following as a result of the coronavirus or COVID-19?" Four types of resource loss were assessed including psychological resources (e.g., motivation to get things done), interpersonal resources (e.g., companionship), physical health resources (e.g., in-home care) and self-care resources (e.g., money for living expenses). Participants rated items on a scale of 1 = *not at all/not applicable* to 4 = *loss to a great degree*.

Depression. We measured symptoms of depression using the two-item Patient Health Questionnaire-2 scale

(PHQ-2; Löwe et al., 2005). This brief measure of depression has demonstrated operating characteristics comparable to the full PHQ-9 scale for detecting depressive disorders (Löwe et al., 2005). Participants were asked about their symptoms over the past 2 weeks on a scale of 0 = *not at all* to 3 = *nearly every day*.

Anxiety. We measured symptoms of anxiety using the two-item Generalized Anxiety Disorder-2 scale (GAD-2; Kroenke et al., 2007). Participants were asked about their symptoms over the past 2 weeks on a scale of 0 = *not at all* to 3 = *nearly every day*.

Subjective distress. We measured subjective distress using the six-item Kessler Distress Scale (K-6; Kessler et al., 2002). Participants were asked about their feelings

over the past 30 days on a scale of 0 = *never* to 4 = *all of the time*.

Perceived social support. We measured perceived social support using a six-item variation of the Duke Social Support Index Subjective Support subscale (DSSI; Koenig et al., 1993). Participants were asked to rate on a scale of 1 = *hardly ever* to 3 = *most of the time* how often they experienced support from people who are important to them.

Results and discussion

Bivariate correlations, Cronbach's alphas, means and standard deviations for each scale are presented in Table 2. To examine our hypotheses, we conducted a series of moderation analyses using Model 1 of the PROCESS macro for SPSS. Simulation studies have suggested that to detect a small moderation effect size with power = .90 and significance = .05, a sample size of approximately 182 is needed, indicating our study was adequately powered (Shieh, 2009). Regression coefficients for these analyses are reported in Table 3.

In support of H1, pandemic-related resource loss had a direct effect on depression symptoms, anxiety symptoms and subjective distress. However, H2 was only partially supported; perceived social support only had a modest buffering (moderating) effect for the effect of resource loss on subjective distress. Social support did not buffer against the adverse impact of resource loss on depression or anxiety symptoms.

STUDY 2

Method

Participants and procedures

Participants were 322 U.S. adults with at least one chronic disease. The most prevalent chronic health conditions reported were arthritis ($n = 98$, 30.4%), diabetes ($n = 87$, 27.0%) and high blood pressure ($n = 157$, 48.8%). A nationwide, stratified, nonrandom community sample was recruited via Qualtrics Panels in early April 2020 (3 weeks after COVID-19 was declared a global pandemic). Participant quotas ensured approximate representativeness of the adult population in the United States regarding gender, race, geographic location and religious affiliation. This study was approved by a university institutional review board. Participants completed an online survey and were presented with an informed consent form before beginning the study and with a debriefing form that included information about mental health resources after completing the survey. Participants were compensated $5.00 USD. The data reported in this study are drawn from a larger, longitudinal study on dispositional hope. Additional details about these demographic variables are available from the first author upon request.

Measures

Pandemic-related resource loss. We measured COVID-related resource loss using an adapted 12-item version of the Conservation of Resources–Evaluation (COR-E; Hobfoll & Lilly, 1993). The instructions were adapted to ask participants, "To what extent have you lost any of the following things as a result of the coronavirus (COVID-19) pandemic?" and three items were used to measure each of four types of resource loss: interpersonal resources (e.g., "Companionship"), psychological resources (e.g., "Hope"), physical health resources (e.g., "Personal health") and economic resources (e.g., "Adequate income"). Participants rated items on a scale of 0 = *not at all/not applicable* to 4 = *loss to a great degree*.

Depression symptoms. We measured symptoms of depression using the nine-item Patient Health Questionnaire (PHQ; Kroenke et al., 2001). Participants are asked about their symptoms over the past 2 weeks on a scale of 0 = *not at all* to 3 = *nearly every day*.

Anxiety symptoms. We measured symptoms of anxiety using the seven-item Generalized Anxiety Disorder-7 scale (GAD-7; Spitzer et al., 2006). Participants are asked about their symptoms over the past 2 weeks on a scale of 0 = *not at all* to 3 = *nearly every day*.

Subjective distress. We measured psychological distress using the 10-item Perceived Stress Scale (PSS; Cohen et al., 1983). Participants are asked about their symptoms over the past month on a scale of 0 = *never* to 4 = *very often*.

Perceived social support. We measured perceived social support using the eight-item Medical Outcomes Study Social Support Survey (MOS-SS; Moser et al., 2012). Participants rated items on a scale of 1 = *none of the time* to 5 = *all of the time*.

Trait resilience. We measured trait resilience using the six-item Brief Resilience Scale (BRS; Smith et al., 2008). Participants rated items on a scale of 1 = *strongly disagree* to 5 = *strongly agree*.

Trait optimism. We measured trait optimism using the eight-item Life Orientation Test (LOT; Scheier et al., 1994). Participants rated items on a scale of 0 = *strongly disagree* to 4 = *strongly agree*.

TABLE 3
Study 1 moderation analyses

Predictor or moderator variable	Coefficient	SE	t	p	Lower CI	Upper CI
Depression symptoms						
Constant	−.03	.05	−0.62	.538	−.14	.07
Pandemic-related resource loss	.27	.05	5.08	<.001	.16	.37
Perceived social support	−.29	.05	−5.62	<.001	−.40	−.19
Resource loss × social support	−.07	.05	−1.35	.179	−.17	.03
Anxiety symptoms						
Constant	−.04	.05	−0.70	.486	−.14	.07
Pandemic-related resource loss	.28	.05	5.35	<.001	.17	.38
Perceived social support	−.32	.05	−6.18	<.001	−.42	−.22
Resource loss × social support	−.08	.05	−1.58	.116	−.18	.02
Subjective distress						
Constant	−.04	.05	−0.84	.404	−.14	.06
Pandemic-related resource loss	.27	.05	5.44	<.001	.17	.37
Perceived social support	−.36	.05	−7.33	<.001	−.46	−.27
Resource loss × social support	−.11	.05	−2.32	.021	−.21	−.02

Note: $N = 289$. Predictor and moderator variables were mean-centred prior to analysis.

TABLE 4
Means, standard deviations and intercorrelations for Study 2 variables

Variable	1	2	3	4	5	6	7
1. Pandemic-related resource loss	(.87)						
2. Depression symptoms	**.45**	(.88)					
3. Anxiety symptoms	**.47**	**.78**	(.92)				
4. Subjective distress	**.44**	**.71**	**.74**	(.91)			
5. Perceived social support	−.17	**−.25**	**−.19**	**−.32**	(.95)		
6. Trait resilience	**−.30**	**−.57**	**−.57**	**−.63**	**.39**	(.91)	
7. Trait optimism	**−.28**	**−.57**	**−.53**	**−.64**	**.40**	**.69**	(.92)
M	0.93	4.08	4.53	1.29	3.94	3.70	3.73
SD	0.80	4.86	4.99	0.78	1.06	0.81	0.99
Possible range	0–4	0–27	0–21	0–4	1–5	1–5	1–5

Note: $N = 322$. Coefficient alphas are presented in parentheses along the diagonal. All correlations that are significant at $p < .001$ are indicated in bold.

Results and discussion

Bivariate correlations, Cronbach's alphas, means and standard deviations for each scale are presented in Table 4. We followed the same analytic strategy as in Study 1, except we also examined positive psychological traits as moderators of the relationship between pandemic-related resource loss and mental health outcomes. Full results of these moderation analyses are reported in Table 5.

In support of H1, pandemic-related resource loss was consistently related to higher mental distress (depression symptoms, anxiety symptoms and subjective distress). H2 was not supported; perceived social support did not have a buffering (moderating) effect on any mental distress outcome. Nevertheless, as it did in Study 1, social support had a small-sized direct effect on all three outcomes. Finally, H3 essentially was fully supported. Trait optimism modestly buffered (moderated) the adverse effect of resource loss on all three mental distress outcomes, and trait resilience did so for all but

one outcome (subjective distress). These moderating effects were consistently small-sized, however.

GENERAL DISCUSSION

The purpose of this study was to use COR theory to examine protective factors against declines in mental health during the COVID-19 pandemic within vulnerable populations. Across two studies of populations vulnerable to both resource loss and COVID-19 (racially diverse, home-bound older adults living in poverty and individuals with a chronic health condition), we found that resource loss due to COVID-19 was related to worse mental health. This corroborated prior literature in which vulnerable populations with fewer resources prior to the disaster are negatively psychologically affected by resource loss (Hobfoll et al., 2015). Perceived social support was related to better mental health in both populations which also aligned with prior literature (Blazer, 2008; Nisar et al., 2021); however, it did not demonstrate any consistent buffering effects against the impact of resource loss

TABLE 5
Moderation analyses for Study 2

	Coefficient	SE	t	p	Lower CI	Upper CI
Depression symptoms						
Constant	4.04	.24	16.74	<.001	3.57	4.52
Pandemic-related resource loss	2.54	.30	8.38	<.001	1.95	3.14
Perceived social support	−0.83	.23	−3.65	<.001	−1.28	−0.38
Resource loss × social support	−0.31	.31	−1.01	.315	−0.91	0.29
Constant	3.90	.22	18.11	<.001	3.48	4.33
Pandemic-related resource loss	1.83	.27	6.72	<.001	1.30	2.37
Trait resilience	−2.72	.27	−10.13	<.001	−3.25	−2.19
Resource loss × resilience	−0.93	.32	−2.93	.004	−1.56	−0.31
Constant	3.91	.21	18.45	<.001	3.49	4.32
Pandemic-related resource loss	1.86	.27	6.93	<.001	1.33	2.39
Trait optimism	−2.27	.22	−10.42	<.001	−2.70	−1.84
Resource loss × optimism	−0.80	.26	−3.08	.002	−1.31	−0.29
Anxiety symptoms						
Constant	4.52	.25	18.14	<.001	4.03	5.01
Pandemic-related resource loss	2.80	.31	8.92	<.001	2.18	3.41
Perceived social support	−0.56	.24	−2.35	.019	−1.02	−0.09
Resource loss × social support	−0.04	.32	−0.12	.901	−0.66	0.58
Constant	4.33	.22	19.82	<.001	3.90	4.76
Pandemic-related resource loss	1.98	.28	7.18	<.001	1.44	2.53
Trait resilience	−2.79	.27	−10.25	<.001	−3.33	−2.25
Resource loss × resilience	−1.03	.32	−3.19	.002	−1.66	−0.40
Constant	4.33	.22	19.36	<.001	3.89	4.77
Pandemic-related resource loss	2.11	.28	7.44	<.001	1.55	2.67
Trait optimism	−2.04	.23	−8.85	<.001	−2.49	−1.58
Resource loss × optimism	−0.88	.27	−3.22	.001	−1.42	−0.34
Subjective distress						
Constant	1.28	.04	33.73	<.001	1.21	1.36
Pandemic-related resource loss	0.39	.05	8.11	<.001	0.29	0.48
Perceived social support	−0.19	.04	−5.18	<.001	−0.26	−0.12
Resource loss × social support	−0.03	.05	−0.55	.584	−0.12	0.07
Constant	1.28	.03	38.60	<.001	1.21	1.34
Pandemic-related resource loss	0.27	.04	6.42	<.001	0.19	0.35
Trait resilience	−0.51	.04	−12.48	<.001	−0.60	−0.43
Resource loss × resilience	−0.06	.05	−1.19	.235	−0.15	0.04
Constant	1.27	.03	39.36	<.001	1.21	1.33
Pandemic-related resource loss	0.27	.04	6.68	<.001	0.19	0.35
Trait optimism	−0.43	.03	−12.86	<.001	−0.49	−0.36
Resource loss × optimism	−0.08	.04	−2.12	.034	−0.16	−0.01

Note: $N = 322$. Predictor and moderator variables were mean-centred prior to analysis.

on mental health. Finally, within the sample of individuals with a chronic illness, we found the positive psychological traits of resilience and optimism did have a buffering effect (albeit small) on the impact of resource loss on mental health. This also aligns with prior work on the protective effects of resilience and optimism in the context of disasters (Carbone & Echols, 2017; Cherry et al., 2017).

Results of this study add to the growing support for COR theory in the context of disasters (Hobfoll et al., 2015). However, contrary to what we expected based on COR theory and prior research, social support did not appear to be a strong protective factor in terms of buffering the deleterious effects of resource loss on mental health. This was surprising given that perceived social support was relatively high in both samples (Study

1 $M = 2.57$, possible range $= 1–3$; Study 2 $M = 3.94$, possible range $= 1–5$). We offer a few explanations for why this may be the case.

First, it is worth noting that there were significant main effects for social support such that higher levels were related to less anxiety, depression and psychological distress, which is consistent with prior disaster literature (Blazer, 2008, Nisar et al., 2021), as well as the literature on older adult distress (Krause, 2006). However, these effects were small to moderate in magnitude. Furthermore, resource loss was relatively low in both of our samples (Study 1 $M = 1.57$, possible range $= 0–4$; Study 2 $M = .93$, possible range $= 0–4$), and the effects of resource loss on mental health were also moderate in magnitude. Taken together, two weak to moderate main

effects would create an even weaker interaction effect. It could be that these already vulnerable populations started with fewer resources, and thus had fewer resources to lose from the pandemic.

COR theory may provide an explanation for the mechanism of how social support acts as a protective factor against negative psychological outcomes as a result of resource loss. Namely, social support acts as part of a resource caravan (Hobfoll et al., 2015) that can help fill in lost resources to individuals within their networks. COVID-19 is a global disaster with far reaching effects. To this end, social support enables disaster survivors to protect, build and broaden their resources; however, this pandemic may have thwarted social support from behaving as it does in most disasters.

For example, even when social support was reported present for the individuals within our studies, these supports may not be able to function as a resource caravan to fill in additional lost resources. For instance, home-bound older adults in this study reported loss of specific resources such as HCBS, namely receiving home-delivered meals (meals on wheels), and caregiver support, both of which are provided through the Aging Services Network (ASN) for home-bound older adults in our sample. Although these older adults reported having social support, critical nutrition and caregiving services were thwarted due to their vulnerability to become deathly ill from COVID-19. Without the additional social support that often accompanies disasters, the buffering effect was lower with home-bound older adults in the context of COVID-19. In addition to losing needed services, they also reported losing their sense of optimism, and other "conditions" resources.

Finally, in line with prior work (Cherry et al., 2017; Riolli et al., 2002) trait optimism and resilience did appear to offer some protection against declines in mental health during the pandemic. This indicates that chronically ill participants were at least somewhat able to draw upon their personal strengths and dispositions to cope with their experiences. Individuals who perceive themselves as being able to overcome or bounce back from hardship (i.e., trait resilience) may be better able to put their current circumstances into context (Smith et al., 2008). It also appears that having a disposition towards positive expectations for the future (i.e., optimism), despite current adversity, facilitates better mental health (Conversano et al., 2010).

Although COVID-19 was ongoing with an uncertain end at the time of data collection, participants may have seen themselves as able to withstand protracted hardship and may have maintained faith that at the personal and/or societal level, conditions would improve at some point in the future. However, it is also important to note that resilience and optimism were measured as traits, which could be hard to change within a short period of time in coping with COVID-19 or other disasters.

These results align with Hobfoll et al.'s (2015) theorising on resource loss spirals and has implications for policy and community-level interventions. Reactive strategies to address mental health in the wake of disasters may be less effective than proactive strategies aimed at building resilience.

Limitations and directions for future research

This study has several limitations. First, we strategically recruited vulnerable populations due to their likelihood of being impacted by resource loss. We also used convenience sampling, so these findings cannot be generalised to the broader population within the United States or even globally given that all participants resided within the United States. Furthermore, males were underrepresented in Study 1, so it is not clear how well these results would generalise to males. Second, these data were cross-sectional in nature. Therefore, it is not possible to determine causality in the relationships observed among the variables in this study. Additionally, the measures we used to assess constructs differed across our two studies, so direct comparison of results is not possible. Finally, it is important to keep in mind these data were collected in the early months of the pandemic, and the pandemic is ongoing and expected to last well into the future. These relationships may shift over time; individuals may lose additional or different types of resources, and mental health may worsen as coping resources will likely be stretched even further over time.

ETHICAL STATEMENT

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Georgia State University and Wheaton College Institutional Review Board and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual adult participants included in the study.

REFERENCES

Armon, G., Melamed, S., Toker, S., Berliner, S., & Shapira, I. (2014). Joint effect of chronic medical illness and burnout on depressive symptoms among employed adults. *Health Psychology*, *33*, 264–272.

Blazer, D. G. (2008). How do you feel about … ? Health outcomes in late life and self-perceptions of health and well-being. *The Gerontologist*, *48*, 415–422.

Carbone, E. G., & Echols, E. T. (2017). Effects of optimism on recovery and mental health after a tornado outbreak. *Psychology & Health*, *32*, 530–548.

Cherry, K. E., Sampson, L., Galea, S., Marks, L. D., Nezat, P. F., Baudoin, K. H., & Lyon, B. A. (2017). Optimism and hope after multiple disasters: Relationships to health-related quality of life. *Journal of Loss and Trauma*, *22*, 61–76.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396.

Conversano, C., Rotondo, A., Lensi, E., Della Vista, O., Arpone, F., & Reda, M. A. (2010). Optimism and its impact on mental and physical well-being. *Clinical Practice and Epidemiology in Mental Health*, *6*, 25–29.

Ferreira, R. J., Buttell, F., & Elmhurst, K. (2018). The Deepwater Horizon oil spill: Resilience and growth in the aftermath of postdisaster intimate partner violence. *Journal of Family Social Work*, *21*, 22–44.

Gustavsson, J., & Beckman, L. (2020). Compliance to recommendations and mental health consequences among elderly in Sweden during the initial phase of the COVID-19 pandemic: A cross-sectional online survey. *International Journal of Environmental Research and Public Health*, *17*, 5380.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*, 513–524.

Hobfoll, S. E., & Lilly, R. S. (1993). Resource conservation as a strategy for community psychology. *Journal of Community Psychology*, *21*, 128–148.

Hobfoll, S. E., Stevens, N. R., & Zalta, A. K. (2015). Expanding the science of resilience: Conserving resources in the aid of adaptation. *Psychological Inquiry*, *26*, 174–180.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Normand, S. L., Walters, E. E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, *32*, 959–976.

Koenig, H. G., Weslund, R. E., George, L. K., Hughes, D. C., Blazer, D. G., & Hybels, C. (1993). Abbreviating the Duke Social Support Index for use in chronically ill elderly individuals. *Psychosomatics*, *34*, 61–69.

Krause, N. (2006). Church-based social support and mortality. *The Journals of Gerontology: Series B*, *61*, S140–S146.

Kroenke, K., Spitzer, R., & Williams, J. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*, 606–613.

Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, *146*, 317–325.

Lightfoot, E. S., Lesen, A. E., & Ferreira, R. J. (2020). Gender and resilience in Gulf Coast communities: Risk and protective factors following a technological disaster. *International Journal of Disaster Risk Reduction*, *50*, 101716.

Löwe, B., Kroenke, K., & Gräfe, K. (2005). Detecting and monitoring depression with a two-item questionnaire (PHQ-2). *Journal of Psychosomatic Research*, *58*, 163–171.

Moser, A., Stuck, A. E., Silliman, R. A., Ganz, P. A., & Clough-Gorr, K. M. (2012). The eight-item modified Medical Outcomes Study Social Support Survey: Psychometric evaluation showed excellent performance. *Journal of Clinical Epidemiology*, *65*, 1107–1116.

Nisar, Q. A., Haider, S., Ali, F., Naz, S., & Ryu, K. (2021). Depletion of psychological, financial, and social resources in the hospitality sector during the pandemic. *International Journal of Hospitality Management*, *93*, 102794.

Pettinicchio, D., Maroto, M., Chai, L., & Lukk, M. (2021). Findings from an online survey on the mental health effects of COVID-19 on Canadians with disabilities and chronic health conditions. *Disability and Health Journal*, *14*, 101085.

Richardson, S., Hirsch, J. S., Narasimhan, M., Crawford, J. M., McGinn, T., Davidson, K. W., & Cookingham, J. (2020). Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. *JAMA*, *323*, 2052–2059.

Riolli, L., Savicki, V., & Cepani, A. (2002). Resilience in the face of catastrophe: Optimism, personality, and coping in the Kosovo crisis. *Journal of Applied Social Psychology*, *32*, 1604–1627.

Sattler, D. N., Preston, A. J., Kaiser, C. F., Olivera, V. E., Valdez, J., & Schlueter, S. (2002). Hurricane Georges: A cross-national study examining preparedness, resource loss, and psychological distress in the US Virgin Islands, Puerto Rico, Dominican Republic, and the United States. *Journal of Traumatic Stress*, *15*, 339–350.

Schapmire, T. J., & Faul, A. C. (2017). Depression symptoms in older adults with cancer: A multilevel longitudinal study. *Journal of Psychosocial Oncology*, *35*, 260–277.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, *67*, 1063–1078.

Shannonhouse, L., Bialo, J., Majuta, A., Zeligman, M., Davis, D., McElroy-Heltzel, S., Aten, J., Davis, E., Van Tongeren, D., & Hook, J. (2019). Conserving resources during chronic disaster: Impacts of religious and meaning-focused coping on Botswana drought survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*, 137–146.

Shieh, G. (2009). Detecting interaction effects in moderated multiple regression with continuous variables: Power and sample size considerations. *Organizational Research Methods*, *12*, 510–528.

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The Brief Resilience Scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*, 194–200.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*, 1092–1097.