Title

COVID-19 related moral injury: Associations with pandemic-related perceived threat and risky and protective behaviors

Authors

Khan, AJ
Nishimi, K
Tripp, P
et al.

Publication Date

2021-10-01

DOI

10.1016/j.jpsychires.2021.07.037

Peer reviewed

Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Journal of Psychiatric Research 142 (2021) 80–88

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/jpsychires

COVID-19 related moral injury: Associations with pandemic-related perceived threat and risky and protective behaviors

A.J. Khan [a,b,c,*], K. Nishimi [b,c], P. Tripp [c], D. Maven [c], A. Jiha [c], E. Woodward [b,c], S. Inslicht [b,c], A. Richards [b,c], T.C. Neylan [b,c], S. Maguen [b,c,1], A. O'Donovan [b,c,**,1]

[a] Department of Psychiatry, University of California San Diego, La Jolla, CA, USA
[b] Department of Psychiatry, University of California San Francisco, San Francisco, CA, USA
[c] San Francisco Veterans Affairs Healthcare System, San Francisco, CA, USA

ARTICLE INFO

Keywords:
Coronavirus
Moral injury
Perceived threat
Risky behaviors
Pandemic

ABSTRACT

Background: The coronavirus-2019 (COVID-19) pandemic is associated with increased potential for morally injurious events, during which individuals may experience, witness, or learn about situations that violate deeply held moral beliefs. However, it is unknown how pandemic risk and resilience factors are associated with COVID-related moral injury.

Methods: Individuals residing in the U.S. (N = 839; M_{age} = 37.09, *SD* = 11.06; 78% women; 63% White; 33% PTSD) participating in an online survey reported on COVID-19 related moral injury (modified Moral Injury Events Scale), perceived current and future threat of pandemic on life domains (social, financial, health), and COVID-19 risky and protective behaviors. Multivariate linear regressions examined associations of perceived threat and risky and protective behaviors on type of COVID-19 related moral injury (betrayal, transgression by others, self).

Results: Participants endorsed MI betrayal (57%, N = 482), transgression by other (59%, N = 497), and by self 17% (N = 145). Adjusting for sociodemographics, only future threat of COVID-19 to health was significantly associated with betrayal (B = 0.21, $p = .001$) and transgression by other (B = 0.16, $p = .01$), but not by self. In contrast, high frequency of risky behaviors was associated with transgressions by self (B = 0.23, $p < .001$). Sensitivity analyses showed PTSD did not moderate the observed effects.

Conclusions: Betrayal and transgression by others was associated with greater perceived future threat of COVID-19 to health, but not financial or social domains. Stronger endorsement of transgression by self was associated with more frequently engaging in risky behaviors for contracting COVID-19. These findings may suggest the need for individual, community, and system level interventions to address COVID-19 related moral injury.

1. Introduction

The coronavirus 2019 (COVID-19) pandemic has had strong adverse effects on public health and economic well-being around the globe (e.g., Congressional Research Service, 2021; Salari et al., 2020). In the United States (U.S.), in addition to the possible individual life threat posed by COVID-19, the pandemic is associated with increasing levels of depression, anxiety, and substance misuse (Czeisler et al., 2020; Ettman et al., 2020). Another possible mental health sequelae from COVID-19 is moral injury, which refers to the biopsychospiritual suffering stemming from participating, witnessing, or learning about events that transgress one's deeply held moral beliefs (Litz et al., 2009; Shay, 2014). Moral injury is in essence a social wound, predicated on the morals and values constructed and shaped by communities and society (Scheder et al., 1987). In a time when individual behavior is paramount to the health and well-being of the population (Center for Disease Control, 2020a, b), examining the relationship between pandemic factors and COVID-19 related moral injury is critical to understanding the intricate web of morality, mental health, and public safety.

Moral injury is not a psychiatric diagnosis (Farnsworth et al., 2017;

* Corresponding author. Department of Psychiatry, University of California, San Diego, 9500 Gillman Drive, La Jolla, CA, 92093, USA.
** Corresponding author. 4150 Clement Street, Building 16 (116C-1), San Francisco, CA, 94121, USA.
E-mail addresses: amanda.khan@ucsf.edu (A.J. Khan), aoife.odonovan@ucsf.edu (A. O'Donovan).
[1] Authors share senior authorship.

https://doi.org/10.1016/j.jpsychires.2021.07.037
Received 25 February 2021; Received in revised form 28 June 2021; Accepted 21 July 2021
Available online 22 July 2021

Jinkerson, 2016), but it can include feelings of guilt, shame, anger, disgust, and sadness, thoughts of personal regret and systemic failures, and avoidance and self-handicapping behaviors (Ang, 2017). Moral injury is associated with significant impairment in relational, health, and occupational functioning as demonstrated by poorer trajectories in these areas (e.g., Maguen et al., 2020; Purcell et al., 2016). Largely studied in the context of military experiences (see Griffin et al., 2019a for review), researchers have generally bifurcated potentially morally injurious events into transgressions (by others and self) and betrayal (Bryan et al., 2016; Nash et al., 2013). During COVID-19, significant attention has been directed to the potential of moral injury in healthcare workers, who are having to make challenging ethical decisions about resource allocations, face complex ethical decisions, and grapple with balancing work and personal/family health (Chen et al., 2020; Harper et al., 2020; Lai et al., 2020; Litam and Balkin, 2020; Maguen et al., 2020). Importantly, many other individuals are also likely exposed to potential transgression or betrayal-related events during COVID either professionally (see Williamson et al., 2018) or personally (e.g., Bachem, et al., 2020; Landry et al., 2020).

Across the nation, employers have had to layoff large numbers of employees with families to support (Frontstin and Woodbury, 2020), spiritual leaders and therapists are experiencing significant burnout (e.g., Greene et al., 2020; Sammons et al., 2020), and people are having to choose separation over caregiving for sick family members. Moreover, disease spread is contingent on societal compliance with public safety guidelines (Centers for Disease Control, 2020a,b), and as such, an individual's adherence or lack thereof to those guidelines may put one's own and others' health at stake. Consequently, witnessing others' behaviors and discrepancies between local, state, and country level ordinances may foster feelings of betrayal, immorality, or contempt towards community members and governments or public health systems (Mohsin et al., 2020). However, an individual's perception of the risk of COVID-19 due to personal (e.g., use of protective behaviors such as masks, extent of concern over pandemic) and environmental factors (e.g., work related risks, others' use of protective measures) may influence the presence and degree of moral injury (de Bruin and Bennett, 2020; Harper et al., 2020). Importantly, this relationship may likely be bidirectional. For example, witnessing behaviors or acting in ways that increase risk for COVID-19 can serve as potentially morally injurious events that lead to moral injury. But moral injury can also increase self-punishing behaviors and as such, individuals may take more risk or engage in fewer precautions.

The first aim of the current empirical investigation was to assess levels of COVID-19 related moral injury. Secondly, we sought to examine the relationship between COVID-19 related moral injury and perceived threat of COVID-19 to different life domains. We hypothesized greater perceived current and future threat would be associated with higher levels of moral injury. Finally, we explored whether risky and protective behaviors for contraction of COVID-19 were associated with COVID-19 related moral injury. We expected risky behaviors to be inversely and protective behaviors to be positively (e.g., Usset et al., 2020) associated with COVID-19 related moral injury. We hypothesized protective behaviors to be positively related to moral injury because greater protective behaviors may reflect stronger connection to morals or values (or higher health risk), therefore individuals may have been more likely to perceive certain actions/inactions as transgressions.

2. Method

2.1. Participants and procedures

The current study leveraged a pre-existing participant pool (N = 3631) from a previous entirely remote (online) study from 2017 to 2018, which was focused on posttraumatic stress (Niles et al., 2020); thus, our sample is enriched for trauma exposure and posttraumatic stress disorder (PTSD) symptoms. Participants were community-dwelling adults (≥18 years) living in the US. For the current study, participants from the recruitment pool were re-contacted via email and invited to participate in the current study. If participants consented to participate, they were directed first to a brief, 30-min online Qualtrics survey assessing psychological experiences during the pandemic. Upon completion of the full survey, participants were compensated $5 with Amazon e-gift cards. Data was collected from August 4 through September 19, 2020. Of those contacted, 1000 individuals started the online survey, 78 stopped the survey prior to consenting, 25 did not complete the demographic questions at the start of the survey, and one person declined to consent. The final sample was comprised of 896 individuals. Of note, COVID-19 vaccinations were not yet available when data were collected. The study was reviewed and approved by the Institutional Review Board at the University of California, San Francisco.

2.2. Measures

2.2.1. Demographics

Demographic variables included age, gender identity, race/ethnicity (Non-Hispanic White, Black, Asian, Latinx, other or bi/multiracial), sexual orientation, highest level of education achieved, current employment status, changes to employment or income due to COVID-19, marital status, annual household income, and US Census Bureau region of residence (e.g., northeast).

2.2.2. COVID-19 exposures and vulnerabilities

Participants self-reported whether they had COVID-19 and whether anyone in their household had COVID-19 (yes, diagnosed with a test; probably yes, diagnosed by clinician without test; maybe, suspected COVID-19/presence of some symptoms; no, did not have COVID-19). Participants reported whether they had a COVID-19 test (yes/no), had a condition that increases vulnerability to COVID-19 (yes/no), or knew anyone that had COVID-19 (yes/no).

2.2.3. COVID-19 perceived threat

For the purpose of the current study, we created a 7-item measure to assess the perceived threat of COVID-19 to three life domains: health (2 items, physical and emotional), financial well-being (3 items, work life, financial security, housing), and social well-being (2 items, inside and outside of the home). Participants rated how much threat COVID-19 has presented to each of these areas (current) and for the next 12 months (future). Items were rated on a 5-point Likert scale (0 = no threat, 1 = mild threat, 2 = moderate threat, 3 = severe threat, 4 = extreme threat). Mean scores per life domain were created for analyses.

2.2.4. COVID-19 protective and risky behaviors

For the purpose of the current study, we created a measure to assess risky and protective behaviors in contracting COVID-19. Participants rated the frequency of their engagement in 18 behaviors (10 protective, 8 risky) over the past 30 days. Items were rated of a 5-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = always). Protective behaviors included maintaining 6-feet social distance, mask wearing, washing hands, using hand sanitizer, sanitizing packages, staying up to date on COVID-19 news, isolating or quarantining, stocking up on food or supplies, changing clothes after being outside, and taking immune supplements. Risky behaviors included taking flight for leisure, going to indoor restaurants or bars, attending events with large crowds, socializing indoors, going to outdoor restaurants or bars, socializing outdoors, taking public transportation, and going to grocery stores.[2] Composite scores were created for the average frequency per type of behavior (protective, risky).

[2] Confirmatory factor analysis was performed to examine the underlying structure. Model provide adequate fit, confirming a priori groupings of risk and protective COVID-19 behaviors.

2.2.5. COVID-related moral injury

We adapted the 9-item Moral Injury Events Scale (MIES; Nash et al., 2013) with permission from the developing author (Nash) to capture COVID-19 related moral injury (modified by Khan and Maguen, 2020). The MIES measures exposure to and feelings of three types of moral injury: betrayal (3 items), transgression by others (2 items), and transgression by self (4 items). Instructions were adapted to anchor moral injury to COVID-19 (e.g., "*During the coronavirus pandemic, some individuals may experience, witness, or learn about situations that go against their deeply held moral beliefs*), provide a brief example (e.g., "*having to lay people off, failing to isolate*"), and specify time frame ("*since the coronavirus pandemic began*"). Individual items were not modified except for the three betrayal items. These items are typically anchored to military experiences and for the current study, were modified to assess betrayal by "leaders from the government," "other community members," and "healthcare or public health organizations." Items are rated on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree). Sum totals and averages were created for the three subscales. For regressions, averages for each subscale were used. Internal consistency in the current sample was good (α = 0.84 for total score; 0.82 for transgression by others; 0.94 for transgression by self; 0.75 for betrayal). Inter-item correlations are shown in Supplementary Table 1. For descriptive purposes, MIES average subscale scores were also dichotomized (yes ≥ 4.00, corresponding to slightly agree or greater; no ≤ 3.99). We chose to use all three subscales rather than collapsing the transgressions (by self, others) subscale into one because of evidence that witnessing versus perpetrating transgressions are differentially associated with mental health outcomes (e.g., Bryan et al., 2016; Maguen et al., 2020).

2.2.6. Posttraumatic stress disorder (PTSD)

Past month PTSD severity was assessed using the PTSD Checklist-*5* (PCL-5; Weathers et al., 2013). The PCL-5 is a widely used self-report questionnaire of PTSD symptoms in adults with good psychometric properties (Bovin et al., 2016). Participants rated the severity of 20 symptoms corresponding to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) PTSD criteria on a five-point Likert scale (0 = not at all, 4 = extremely). A total symptom severity score was derived through summation, with potential scores ranging from 0 to 80. Internal consistency in the current sample was excellent (α = 0.96). In line with current guidelines, we defined probable PTSD as a symptom severity score cutoff of ≥33 (Bovin et al., 2016) and meeting this threshold was used as a moderator for sensitivity analyses.

2.3. Statistical analyses

Of the eligible sample (N = 896), 94.3% had complete data (N = 845). Of those, 6 participants were missing MIES data. One participant was missing all MIES items and was excluded from analyses. The remaining five participants were missing only one item and included in analyses. To derive a score for the missing item, we first calculated an average of the subscale score (e.g., betrayal) and used this to replace the missing value. Next, we calculated the new average and sum for the subscale. The final sample used for analyses was comprised of 839 participants. Data distributions of primary variables of interest and covariates were examined for normality and descriptives were derived. We performed bivariate correlations to preliminarily examine the associations between perceived threat, risk and protective behaviors, and COVID-related moral injury. We also performed t-tests to examine whether COVID-19 related moral injury subtype severities differed based on history of having COVID-19 oneself or someone in the home having COVID-19 (0 = no or maybe; 1 = yes confirmed with test and/or doctor diagnosis), knowing anyone with COVID-19 (0 = no, 1 = yes), and having a condition that makes one vulnerable to contracting COVID-19 (0 = no, 1 = yes).

Research shows associations between mental health and moral injury vary based on type of moral injury (e.g., Maguen et al., 2020; Yeterian et al., 2019). Therefore, each series of multivariate linear regressions were performed for each type of COVID-19 related moral injury (betrayal, transgression by others, transgression by self). To examine the effect of perceived threat of COVID-19, we performed multivariate linear regressions with all six average perceived threat variables entered simultaneously (both current and future financial, social, and health). Tests to see if perceived threat data met assumption of collinearity indicated that multicollinearity was not a concern (Tolerance range = 0.36–0.25; VIF range = 3.96–2.79). We also performed multivariate regressions examining the effect of average frequency of COVID-19 risky and protective behaviors (included simultaneously). To improve interpretability, COVID-19 related moral injury scale scores were transformed into z-scores for regressions. All models were adjusted for possible cofounding sociodemographics that were significantly associated with or different on COVID-19 related moral injury at $p < .05$ (using parametric or non-parametric continuous and categorical tests), which were: age, gender (0 = woman and non-binary, transgender, other; 1 = man), sexual orientation (0 = heterosexual, 1 = LGBQ+), marital status (0 = married, 1 = all else), and employment (0 = unemployed; 1 = all else)). We also conducted sensitivity analyses repeating primary regressions further adjusting for the COVID-19 experiences that differed significantly on at least one moral injury scale (which was knowing someone who had COVID-19 and having a condition that made one vulnerable to COVD-19). Finally, because the current sample was PTSD-enriched (33%, N = 277), we performed a sensitivity analyses to determine whether PTSD moderated the relationships between significant perceived threat and behavior variables and COVID-19 related moral injury. All analyses were conducted in SPSS, version 26.

3. Results

3.1. Demographics and preliminary analyses

The majority of the sample identified as women (78%) and college educated (63%), with average age of 37 years (SD = 11.1; see Table 1 for full demographics). The sample was somewhat diverse with regards to race/ethnicity, with approximately 59% identifying as White, 14% as Black or African American, 10% Latinx, 9% Asian, and 8% as other or more than one race. A small proportion of the sample endorsed working in a role that provided either direct (N = 33, 3.9%) or supportive (N = 54, 6.4%) care for COVID-19. Approximately 18% reporting losing their job and 35% reporting losing hours or income (not mutually exclusive). Approximately 33% reported having a COVID-19 test, but rates of confirmed or diagnosed COVID-19 were low (1.4% and 1.1% respectively). Notably, rates of suspecting having had COVID-19 were higher (16%) which may be related to test availability earlier in the pandemic. In examining individual COVID-19 contraction behaviors, the majority of the sample reported high frequency engagement in certain protective behaviors (e.g., 82% always wore masks, 57% always washed their hands) and avoidance of certain risky behaviors (e.g., 83% never flew for leisure, 82% never attended a large event). Average engagement in protective behaviors (M = 2.73, SD = 0.70) was higher than the average engagement in risky behaviors (M = 0.91, SD = 0.70), and they were significantly inversely correlated (see Table 2).

Regarding COVID-19 related moral injury (see Fig. 1), dichotomized MIES averages showed approximately 57% (N = 482) of participants endorsed MI betrayal, 59% (N = 497) endorsed transgression by other (N = 497), and 17% (N = 145) endorsed transgression by self (see Fig. 2). Bivariate correlations revealed all three types of COVID-19 related moral injury were significantly positively associated with both current and future perceived threat of COVID-19 to health and financial and relational well-being (see Table 2). However, only transgression by self was significantly correlated with risk (r = 0.16, $p < .001$) and protective (r = −0.08, $p < .01$) behaviors.

T-tests comparing COVID-19 related moral injury averages across COVID exposures and vulnerabilities revealed no significant differences

Table 1
Sociodemographics, COVID-19 experiences and behaviors, and moral injury.

Characteristic Whole Sample (N = 839)		Mean (SD) or N (%)
Age (in years)		37.09 (11.1)
Gender	Man	168 (20.0)
	Woman	650 (77.5)
	Non-Binary, Transgender, Other	21 (2.5)
Race/Ethnicity	Non-Hispanic White	495 (58.6)
	Black or African American	115 (13.5)
	Asian	79 (9.4)
	Latinx	86 (10.2)
	Other or 2+ races	71 (8.4)
Sexual Orientation	Heterosexual	665 (79.3)
	LGBQ+	173 (20.6)
Education	</ = High School Degree	78 (9.3)
	Some College or Associate's	228 (27.2)
	College Degree or Graduate School	532 (63.4)
Employment	Employed Full Time	467 (55.7)
	Employed Part Time	133 (15.9)
	Unemployed	171 (20.4)
	Student	34 (4.1)
	Retired	19 (2.3)
	Furloughed	14 (1.7)
COVID-19 Employment Changes	Lost Job	153 (18.2%)
	Lost Hours or Income	296 (35.3%)
	Work in Unsafe Conditions	113 (13.5%)
	Laid off or Furloughed	35 (4.2%)
	Increased Workload	209 (24.9%)
	Gained a Job	88 (10.5%)
	Difficulty Working Due to Caregiving	117 (13.9%)
	None of the Above	194 (23.1%)
Annual Household Income	≤$50,000 per year	344 (41.0)
	$50,001-$100,000 per year	334 (39.8)
	$100,001-$150,000 per year	103 (12.3)
	>$150,000 per year	57 (6.8)
Marital status	Married	285 (34.0)
	Single, In a Relationship	249 (29.7)
	Single, No Relationship	235 (28.0)
	Separated/Divorced/Widowed	69 (8.2)
Living Situation	Living Alone	182 (21.7)
	Living with Others	657 (78.3)
Region of Residence	West	240 (28.6)
	Midwest	138 (16.4)
	Northeast	167 (19.9)
	South	291 (34.6)
Had a COVID-19 Test	Yes	271 (32.3)
Had COVID-19	Yes, diagnosed with test	13 (1.5)
	Probably, diagnosed without test	9 (1.1)
	Maybe, suspected COVID-19	137 (16.3)
	No, did not have COVID-19	680 (81.0)
Vulnerable Conditions	Yes	294 (35.0)
Household Member with COVID-19	Yes, diagnosed with test	31 (3.7)
	Probably, diagnosed without test	7 (0.8)
	Maybe, suspected COVID-19	80 (9.5)
	No, did not have COVID-19	721 (85.0)
Know Anyone with COVID-19	Yes	510 (60.8)
Current Perceived Threat	Total (average)	1.71 (0.81)
	Financial	1.67 (1.02)
	Relational	1.78 (1.05)
	Health	2.11 (1.03)
Future Perceived Threat	Total (average)	1.70 (0.87)
	Financial	1.70 (1.06)
	Relational	1.69 (1.02)
	Health	2.10 (1.07)
COVID-19 Behaviors	Total (average)	3.33 (0.49)
	Protective	2.72 (0.66)
	Risky	0.93 (0.66)
COVID-19 related Moral Injury	Total (average)	3.15 (1.10)
	Betrayal	3.91 (1.44)
	Transgression by Others	3.87 (1.60)
	Transgression by Self	2.23 (1.44)

Note. Other race includes Native Hawaiian, Pacific Islander, American Indian, Alaska Native, and Middle Eastern. LGBQ + includes Gay/Lesbian, Bisexual, Queer, Pansexual, and Other. COVID-19 employment changes are not mutually exclusive. All scores are raw. COVID-19 Total Behaviors is average frequency of protective behaviors and risky behaviors (reverse scores). All COVID-19 related moral injury subscale scores ranged from 1.00 to 6.00 in the sample.

on betrayal, transgression by others, or self based on having had COVID-19 or someone in the household having COVID-19 ($ps > .20$). However, COVID-19 related moral injury did differ significantly based on whether a participant knew someone who had COVID-19 or had a condition that increased their vulnerability for contraction. Specifically, individuals who knew someone who had COVID-19 endorsed significantly greater betrayal (M = 4.11, SD = 1.38; t (837) = −5.01, $p < .001$) and transgression by others (M = 3.97, SD = 1.61; t (837) = −2.38, $p = .017$) than those who did not know anyone who had COVID-19 (M = 3.61, SD = 1.46, Cohen's d = 0.35; M = 3.70, SD = 1.58, Cohen's d = 0.17, respectively). Similarly, individuals who had a condition that made them vulnerable to COVID-19 endorsed significantly greater betrayal (M = 4.22, SD = 1.36; t (837) = −4.59, $p < .001$) and transgression by others (M = 4.07, SD = 1.61; t (837) = −2.69, $p = .007$) than those who not have any conditions (M = 3.75, SD = 1.45, Cohen's d = 0.33; M = 3.76, SD = 1.59, Cohen's d = 0.19, respectively). There were no significant associations between any COVID-19-related experiences and severity of transgression by self.

3.2. Primary analyses

Linear regressions adjusting for age, gender, sexual orientation, marital status, and unemployment (see Table 3), showed only future perceived threat of COVID-19 to health was significantly associated with betrayal (β = 0.21, 95% CI 0.09, 0.33, $p = .001$). More specifically, those who endorsed MI due to betrayal perceived COVID-19 as a greater threat to their future health. Similarly, adjusted regression showed only future perceived threat to health was significantly related to transgression by others[3] (β = 0.16, 95% CI 0.04, 0.28, $p = .036$). No perceived threat of any kind was significantly related to transgression by self. In contrast, neither average frequency of risky or protective behaviors were significantly associated with betrayal or transgression by others (see Table 4).[4] However, adjusted linear regressions revealed more risky behaviors for contracting COVID-19 were significantly positively associated with transgression by self (β = 0.23, 95% CI 0.12, 0.33, $p < .001$). More specifically, those who felt like they had crossed a line related to their own morals or values related to the pandemic were more likely to engage in risky behaviors.

3.3. Sensitivity analyses

Linear regressions were repeated further adjusting for history of knowing someone who had COVID-19 and having a condition that increases vulnerability for contracting COVID-19. The pattern of results were unchanged. Perceived threat to one's future health, but not financial or relational well-being, remained significantly associated with betrayal (β = 0.19, 95% CI 0.08, 0.31, $p = .001$) and transgression by

[3] Regressions were repeated using standardized average total MIES scores and collapsing transgressions by others and self into one standardized scaled score. For the total MIES score, average perceived future threat to health approached significance (β = 0.10, 95% CI -0.01, 0.2, $p = .085$). For the collapsed transgression scale, there was no significant effect of perceived threat.

[4] Regressions were repeated using the standardized average total MIES score and collapsing transgressions by self and other into one standardized scaled score. For the total MIES score, frequency of risky behaviors approached significance (β = 0.09, 95% CI -0.01, 0.20, $p = .08$). For the collapsed transgression scale, risky behaviors remained significant (β = 0.15, 95% CI -0.05, 0.26, $p = .004$).

Table 2
Bivariate correlations between COVID-19 related moral injury, perceived threat, and behaviors.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Betrayal	–	.53**	.22**	.12**	.12**	.23**	.17**	.17**	.27**	.03	-.05
2. Transgression by Others		–	.29**	.11**	.09*	.12**	.13**	.11**	.16**	.05	-.05
3. Transgression by Self			–	.13**	.09*	.14**	.13**	.12**	.11**	-.08*	.16**
4. Current Financial Threat				–	.47**	.48**	.82**	.48**	.46**	.19**	.10*
5. Current Relational Threat					–	.54**	.43**	.76**	.49**	.22**	.01
6. Current Health Threat						–	.50**	.53**	.81**	.23**	-.05
7. Future Financial Threat							–	.56**	.58**	.16**	.05
8. Future Relational Threat								–	.61**	.18**	.03
9. Future Health Threat									–	.20**	-.10**
10. COVID-19 Protective Behaviors										–	-.11**
11. COVID-19 Risky Behaviors											–

Note. *p < .01, **p < .01. All scores reflect raw averages. Betrayal and transgression by others and by self refer to COVID-19 related moral injury from adapted Moral Injury Events Scale. Threat is perceived threat of COVID-19 to life domain. Protective and risk reflect frequency of engagement with behaviors.

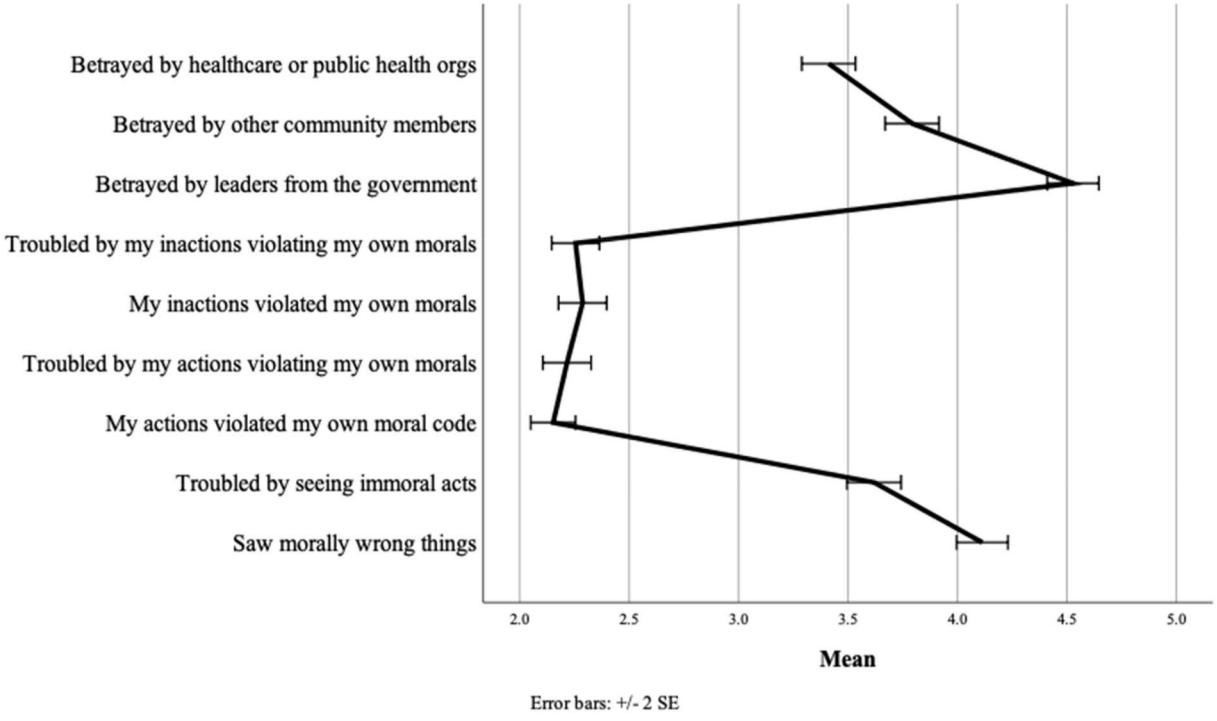

Fig. 1. Raw averages of COVID-related moral injury items from adapted Moral Injury Events Scale.

others (β = 0.15, 95% CI 0.03, 0.27, $p = .016$). Greater frequency of risky behaviors also remained significantly associated transgressions by self (β = 0.23, 95% CI 0.12, 0.33, $p < .001$).

An additional sensitivity analyses was performed to examine whether currently having PTSD moderated the relationships between (1) perceived future health threat and betrayal and transgression by others, and (2) risky behavior frequency and transgression by self. We performed a moderation analysis using the macro PROCESS (Hayes, 2013), mean-centering product variables and adjusting for sociodemographics, COVID-19 vulnerability, and knowing someone who had COVID-19. Models revealed PTSD was significantly associated with transgression by others (b = 0.16, se = 0.07, $p = .03$, 95 CI 0.01–0.31) and self (b = 0.36, se = 0.08, $p < .001$, 95 CI 0.21–0.51). However, PTSD did not moderate the effect of perceived health on betrayal or transgression by self, or the effect of risky behaviors on transgression by self (interaction CIs included 0).

4. Discussion

Although the impact of the COVID-19 pandemic on mental health will continue to unfold for some time, the current study sheds light on reported moral distress and its relationship to COVID-19 perceived threat and safety precaution behaviors. Over half of the sample endorsed betrayal and transgressions by others, and stronger feelings of betrayal and transgression by others were associated with higher perceived threat of COVID-19 to one's future physical and mental health. Although transgressions by self was less frequently endorsed, it was significantly related to engaging in behaviors that elevate risk for contracting COVID-19. Although future longitudinal research is needed, these findings may suggest targeting individual, group, and system level responses to the pandemic could help mitigate long-term moral distress.

The current PTSD-enriched sample of community dwelling individuals endorsed COVID-19 related moral injury at average levels and rates higher than those reported in two recent studies of moral injury (not COVID-19 related) in veterans (Maguen et al., 2020; Wisco et al., 2017). Dichotomizing MIES averages, we found approximately 57% of participants endorsed MI betrayal, 59% endorsed transgression by others, and 17% endorsed transgression by self. In contrast, endorsements were 26% betrayal, 26% transgression by others, and 11% transgression by self in combat veterans (Wisco et al., 2017) and 41%

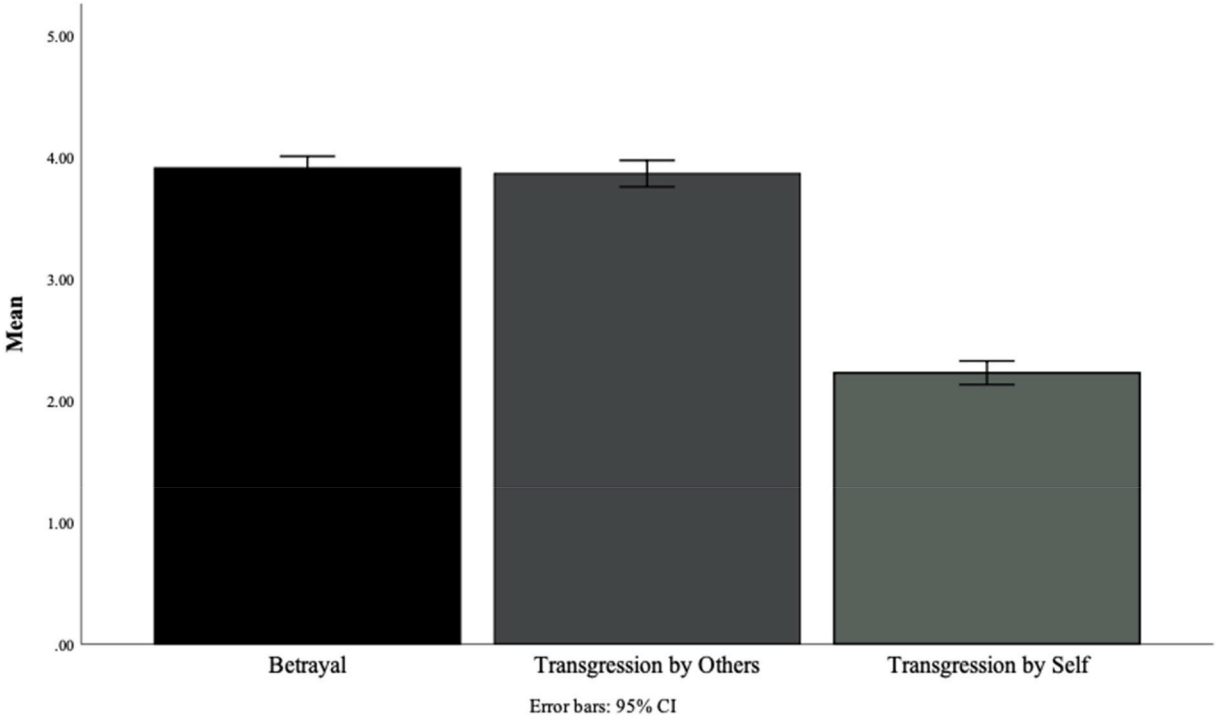

Fig. 2. Raw averages of COVID-related moral injury.

betrayal, 28% transgression by others, and 19% transgression by self in a veteran sample with more female representation (Maguen et al., 2020). Although difficult to compare averages across studies, the current findings reflect moral injury endorsements were higher than those in healthcare workers at the onset of COVID-19 (Hines et al., 2020). Differences in samples and reporting styles notwithstanding, these findings suggest ethically challenging situations during the pandemic are having substantive effects on psychological functioning. Further, endorsements were highest for betrayal, especially by leaders of government and other community members, and transgression by others. Our results highlight the connection between perceptions of how community members and institutions are behaving in response to COVID-19 and individual well-being.

We also found that even when adjusting for being more vulnerable to contracting COVID-19, betrayal and transgression by others were associated with greater perceived threat to future health. This is in line with findings from an international study that found institutional betrayal was associated with greater COVID-19 related fear (Bachem et al., 2020). In considering implications for early intervention, the most effective fear-reduction strategies will likely come as a result of systemic action that actually increases safety through vaccinations (e.g., Oliver et al., 2020), antibody treatments, and restoring structural and social functioning. In the interim however, efforts to boost individual resilience through engaging in moral or value-affirming activities, seeking psychospiritual support, and stress management techniques may help mitigate COVID-19 related moral injury (e.g., Borges et al., 2020; Harris et al., 2015; Williams et al., 2020).

COVID-19 related moral injury, specifically with transgression by self, was significantly associated with more frequent risky behaviors. That transgression by self was associated only with COVID-19 risky behaviors could suggest this type of COVID-19 related moral injury is more related to actual threat *behavior* than threat *perception*. Thus, actions that increase risk for COVID-19 are associated with feelings of having transgressed one's own morals. Although longitudinal research is needed, an alternative interpretation is that individuals who violate their own morals could also be engaging in self-punishment through increased COVID-19 risky behaviors (Maguen et al., 2020). Regardless, moral reasoning research suggests following a moral violation by self, engaging in moral, prosocial behavior can assist in regaining injured self-worth (Sachdeva et al., 2009). Thus, interventions for transgression by self-related moral injury during the pandemic may benefit from incorporating amend-making or value-reorientation as well as self-compassion and self-forgiveness (e.g., Forkus et al., 2019; Griffin et al., 2019; Purcell et al., 2018). In contrast to expectations, frequency of protective behaviors was not significantly related to any type of COVID-19 related moral injury. These data could suggest COVID-19 protective behaviors neither buffer (through engagement) or confer risk (through omission) for moral injury. Alternatively, this could suggest those with moral injury are not changing COVID-19 protective behaviors patterns even if they are increasing risky ones. It is worth noting that the sample endorsed generally high frequencies of protective behaviors and therefore we may not have had enough variability to find associations.

Notably, several important considerations warrant discussion. First, the sample endorsed generally high frequencies of protective behaviors and much lower frequencies of risky behavior. This pattern may imply an underlying moral or values system or moral identity (Reynolds and Ceranic, 2007) or reflect interpretations of public health advice, which may not generalize across all U.S. inhabitants. Importantly, the majority of the sample were employed full-time (55%), had a college degree (63%), and denied losing their job due to COVID-19 (82%). Although 35% reporting losing hours or income, these sample characteristics may have influenced why only future perceived health, but not financial or social, threat was associated with COVID-19 related moral injury. As a result of the pandemic, millions have lost stable employment and job loss is more heavily concentrated in those who do not have a 4-year degree (Center for Budget and Policy Priorities, 2020). Consequently, millions are still behind on housing payments and are reporting food insecurity (Center for Budget and Policy Priorities, 2020). This has been disproportionately true for persons with minority identities (e.g., Fortuna et al., 2020), who also have disproportionally higher rates of COVID-19 (American Public Media Research Lab, 2020). Future research that samples more widely across levels of race, socioeconomic status, education, and job type is critical to better characterize how the

Table 3
Linear regressions with perceived COVID-19 threat predicting COVID-19 related moral injury.

Variable	B	SE	β	t	95% CI Lower	95% CI Upper
Betrayal						ΔF = 10.52**
Age	−0.00	0.00	−0.03	−0.94	−0.01	0.00
Gender	−0.00	0.07	0.00	−0.01	−0.14	0.14
Sexual Orientation	**0.38**	**0.09**	**0.15**	**4.39****	**0.21**	**0.55**
Marital Status	0.03	0.07	0.01	0.37	−0.12	0.17
Employment	0.04	0.08	0.02	0.45	−0.13	0.20
Current Threat						
Financial	−0.03	0.06	−0.03	−0.43	−0.17	0.09
Relational	−0.07	0.05	−0.07	−1.28	−0.17	0.04
Health	0.03	0.06	0.04	0.58	−0.08	0.15
Future Threat						
Financial	0.03	0.06	0.03	0.47	−0.09	0.15
Relational	0.06	0.06	0.06	0.10	−0.06	0.17
Health	**0.21**	**0.06**	**0.22**	**3.49****	**0.09**	**0.33**
Transgression by Others						ΔF = 3.50**
Age	−0.00	0.00	−0.02	−0.43	−0.01	0.01
Gender	0.13	0.07	0.07	1.87	−0.01	0.27
Sexual Orientation	**0.34**	**0.09**	**0.14**	**3.84****	**0.17**	**0.52**
Marital Status	0.11	0.07	0.05	1.49	−0.04	0.26
Employment	0.10	0.09	0.04	1.19	−0.07	0.27
Current Threat						
Financial	0.04	0.06	0.04	0.60	−0.08	0.16
Relational	−0.01	0.05	−0.01	−0.14	−0.11	0.10
Health	−0.07	0.06	−0.07	−1.09	−0.18	0.05
Future Threat						
Financial	0.02	0.06	0.02	0.23	−0.11	0.14
Relational	0.02	0.06	0.02	0.28	−0.10	0.13
Health	**0.16**	**0.06**	**0.17**	**2.55****	**0.04**	**0.28**
Transgression by Self						ΔF = 3.41**
Age	−0.01	0.00	−0.07	−1.86	−0.01	0.00
Gender	**0.14**	**0.07**	**0.07**	**2.02***	**0.00**	**0.28**
Sexual Orientation	0.11	0.09	0.05	1.24	−0.06	0.29
Marital Status	0.07	0.08	0.03	0.96	−0.08	0.22
Employment	−0.04	0.09	−0.01	−0.40	−0.20	0.13
Current Threat						
Financial	0.05	0.06	0.05	0.86	−0.07	0.17
Relational	−0.05	0.05	−0.05	−0.86	−0.15	0.06
Health	0.12	0.06	0.12	1.97	0.00	0.24
Future Threat						
Financial	0.02	0.06	0.02	0.35	−0.10	0.15
Relational	0.08	0.06	0.08	1.37	−0.04	0.20
Health	−0.06	0.06	−0.06	−0.90	−0.18	0.07

Note. *$p < .05$, **$p < .01$. Regression reflects step 2 of model. COVID-19 related moral injury scores are standardized (M = 0, SD = 1).

Table 4
Linear regressions with COVID risk and protective behaviors predicting COVID-19 related moral injury.

Variable	B	SE	β	t	95% CI Lower	95% CI Upper
Betrayal						ΔF = 1.04
Age	−0.00	0.00	−0.04	−0.98	−0.01	0.00
Gender	0.00	0.07	0.00	0.06	−0.14	0.14
Sexual Orientation	**0.40**	**0.09**	**0.16**	**4.46****	**0.22**	**0.58**
Marital Status	0.02	0.08	0.01	0.31	−0.12	0.17
Employment	0.10	0.09	0.04	1.17	−0.07	0.27
COVID Behaviors						
Protective	0.05	0.05	0.03	0.97	−0.05	0.15
Risky	−0.05	0.05	−0.03	−0.96	−0.16	0.05
Transgression by Others						ΔF = 2.31
Age	−0.00	0.00	−0.02	−0.62	−0.01	0.00
Gender	**0.15**	**0.07**	**0.07**	**2.05***	**0.01**	**0.29**
Sexual Orientation	**0.34**	**0.09**	**0.14**	**3.75****	**0.16**	**0.51**
Marital Status	0.13	0.07	0.06	1.79	−0.01	0.28
Employment	0.14	0.09	0.06	1.61	−0.03	0.30
COVID Behaviors						
Protective	0.09	0.05	0.06	1.77	−0.01	0.20
Risky	−0.05	0.05	−0.04	−1.02	−0.16	0.05
Transgression by Self						ΔF = 11.46**
Age	−0.01	0.00	−0.06	−1.54	−0.01	0.00
Gender	**0.15**	**0.07**	**0.07**	**2.06***	**0.01**	**0.28**
Sexual Orientation	0.17	0.09	0.07	1.86	−0.01	0.34
Marital Status	0.16	0.07	0.02	0.69	−0.09	0.20
Employment	0.05	0.08	0.02	0.46	−0.13	0.20
COVID Behaviors	0.04					
Protective	−0.08	0.05	−0.06	−1.62	−0.19	0.02
Risky	**0.23**	**0.05**	**0.15**	**4.31****	**0.12**	**0.33**

Note. *$p < .05$, **$p < .01$. Regression reflects step 2 of model. COVID-19 related moral injury scores are standardized (M = 0, SD = 1).

negative impacts of COVID-19 on financial and relational well-being are associated with COVID-19 related moral injury. Furthermore, ability to comply with safety guidelines is also reflective of privilege (e.g., being able to have groceries delivered vs. going into the store, driving one's own car vs. needing to take public transportation) and participants may have been employed in risky contexts (e.g., grocery stores), thus findings should be contextualized within this cultural reality. Finally, LGBQ + identity was significantly related to betrayal and transgression by others in regressions, possibly reflective of the impact of different within-group responses to COVID-19 or discrimination during the pandemic.

4.1. Limitations

Despite notable strengths including a large sample size, rapid empirical investigation of novel constructs, national reach, and thorough data on COVID-19 experiences, several limitations should be noted. First, the data are cross-sectional and thus we are unable to determine causality in associations between perceived pandemic threat and behaviors and COVID-19 related moral injury. As the eligible sample included only 25% of those initially contacted from the recruitment pool, there is also possible non-response bias and all of our measures were based on self-report and thus subject to social desirability biases. Subsequent analyses revealed non-responders were significantly ($p < .001$), albeit modestly, younger (M = 31.4(*SD* = 10.5)) and had worse PTSD severity (M = 43.4(*SD* = 19.7)) than responders (M_{age} = 34.7(*SD* = 11.1); M_{PTSD} = 40.5(*SD* = 19.4)). The samples did not differ on gender, trauma count, prevalence of trauma exposure, or PTSD diagnosis. However, it is important to note that participants were recruited from a PTSD-enriched sample, and PTSD is associated with moral injury. Therefore, the current findings may reflect associations attributable to higher PTSD prevalence and co-occurrence, and therefore may not generalize to the general public. Additionally, the MIES was originally developed for veterans and assesses subjective appraisals of potentially morally injurious events versus objective events, and the scales collapse across both exposure to events and psychological reactions to those events. Participants may thus have referenced different events and used different thresholds for what qualifies as a moral transgression. We also adapted the MIES without validation testing and there remains a lack of consensus on both the definition and phenomenology of moral injury, thus the current measure may be missing important construct facets. Furthermore, it is critical that we better understand all of these aspects of moral injury and their manifestations in non-veteran samples to better study other groups, especially in light of the pandemic. The sample was comprised predominately of women, limiting the generalizability to men and gender diverse persons. Notably though, the sample covered nearly all U.S. states and generally was largely representative of the

racial/ethnic distribution of the U.S. (U. S. Census Bureau, 2020).

5. Conclusions

The current study provides novel information on moral injury in response to COVID-19 in a sample of individuals spread across the U.S. Our data indicate that ethical challenges associated with the COVID-19 pandemic are being felt as moral distress. Betrayal and transgressions by others were more highly endorsed than transgressions by self. Both types of moral injury that pertain to others' behaviors are associated with how much a person perceives threat of COVID-19 to their future physical and mental health. However, moral injury from one's own actions or inactions was most strongly associated with how frequently a person engages in behaviors that increase risk for contracting COVID-19. Although longitudinal research is needed, intergroup and system level reconciliation (Enright et al., 2020; Griffin et al., 2019a,b) in addition to interventions focused on self-forgiveness may be needed to facilitate moral healing from this pandemic.

Author contributions

AJK: Study Design, Conceptualization, Planned and Conducted Analyses, Table and Figure Presentation, Writing – original draft, Writing-Original Draft Preparation; KN: Study Design and Implementation, Database Creation, Writing-Reviewing and Editing; PT: Study Design and Implementation; DV: Study Design and Implementation; AJ: Study Design and Implementation; EW: Study Design and Implementation, Writing-Reviewing and Editing; SI: Writing-Reviewing and Editing; AR: Writing-Reviewing and Editing; TCN: Writing-Reviewing and Editing; SM: Supervision; Writing-Reviewing and Editing; AOD: Study Design and Conceptualization, Funding acquisition, Supervision, Writing-Reviewing and Editing.

Role of funding source

This work was supported by the UCSF Department of Psychiatry Rapid Award (AOD) and the National Institutes of Mental Health (AOD; K01MH109871). AJK is supported by the VA Office of Academic Affiliations in conjunction with the Advanced Fellowship Program in Mental Illness Research and Treatment, Department of Veterans Affairs. KN is supported by the Department of Veterans Affairs San Francisco Data Science Fellowship. These funding sources did not have any role in the conduct of the research or the preparation of this article. The views expressed in this article are those of the authors and do not necessarily reflect the views of the Department of Veterans Affairs or the United States Government.

Declaration of competing interest

The authors declare no conflicts of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpsychires.2021.07.037.

References

American Public Media Research Lab, 2020. The color of coronavirus: COVID-19 deaths by race and ethnicity in the U.S. https://www.apmresearchlab.org/covid/deaths-by-race. (Accessed 6 January 2021).

Ang, J.M.S., 2017. Moral dilemmas and moral injury. Int. J. Appl. Philos. 21 (2), 189–205.

Bachem, R., Tsur, N., Levin, Y., Abu-Raiya, H., Maercker, A., 2020. Negative affect, fatalism, and perceived institutional betrayal in times of the coronavirus pandemic: a cross-cultural investigation of control beliefs. Front. Psychiatr. 11, 589914.

Borges, L.M., Barnes, S.M., Farnsworth, J.K., Drescher, K.D., Walser, R.D., 2020. A contextual behavioral approach for responding to moral dilemmas in the age of COVID-19. J Contextual Behav Sci 17, 95–101.

Bovin, M.J., Marx, B.P., Weathes, F.W., Gallagher, M.W., Rodriguez, P., Schnurr, P.P, Keane, T.M., 2016. Psychometric properties of the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (PCL-5) in veterans. Psychol. Assess. 28 (11), 1379–1391.

Bryan, C.J., Bryan, A.O., Anestis, M.D., Anestis, J.C., Green, B.A., Etienne, N., Morrow, C., Ray-Sannerud, B., 2016. Measuring moral injury: psychometric properties of the moral injury events scale in two military samples. Assessment 23 (5), 557–570.

Center for Budget and Policy Priorities, 2020. Tracking the COVID-19 recession's effects on food, housing, and employment hardships. https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-recessions-effects-on-food-housing-and. (Accessed 19 January 2021).

Centers for Disease Control, 2020a. Implementation of Mitigation Strategies for Communities with Local COVID-19 Transmission. US Department of Health and Human Services, CDC.

Centers for Disease Control, 2020b. Coronavirus Disease 2019 (COVID-19) in the. U.S. US Department of Health and Human Services, CDC.

Chen, Q., Liang, M., Li, Y., et al., 2020. Mental health care for medical staff in China during the COVID-19 outbreak. Lancet Psychiatr. 7 (4), e15–16.

Congressional Research Service, 2021. Global economic effects of COVID-19. https://crsreports.congress.gov/product/pdf/R/R46270. (Accessed 20 February 2021).

Czeisler, M.É., Lane, R.I., Petrosky, E., Wiley, J.F., Christensen, A., Rashid Njai, R., Weaver, M.D., Robbins, R., Facer-Childs, E.R., Barger, L.K., Czeisler, C.A., Howard, M.E., Rajaratnam, S.M.W., 2020. Mental health, substance use, and suicidal ideation during the COVID-19 pandemic—United States, June 24-30, 2020. MMWR Morb. Mortal. Wkly. Rep. 69 (32), 1049–1057.

de Bruin, W.B., Bennett, D., 2020. Relationships between initial COVID-19 risk perceptions and protective health behaviors: a national survey. Am. J. Prev. Med. 59 (2), 157–167.

Enright, R.D., Johnson, J., Na, F., Erzar, T., Hirshberg, M., Huang, T., Klatt, J., Lee, C., Boateng, B., Boggs, P., Hsiao, T.-E., Olson, C., Shu, M.L., Song, J., Wu, P., Zhang, B., 2020. Measuring intergroup forgiveness: the enright group forgiveness inventory. Peace Conflict Stud. 27 (1).

Ettman, C.K., Abdalla, S.M., Cohen, G.H., Sampson, L., Vivier, P.M., Galea, S., 2020. Prevalence of depression symptoms in US adults before and during the COVID-19 pandemic. JAMA Netw Open 3 (9), e2019686.

Farnsworth, J.K., Drescher, K.D., Evans, W., Walser, R.D., 2017. A functional approach to understanding and treating military-related moral injury. Journal of Contextual Behavioral Science 6 (4), 391–397.

Forkus, S.R., Breines, J.G., Weiss, N.H., 2019. Morally injurious experiences and mental health: the moderating role of self-compassion. Psychological Trauma: Theory, Research, Practice, and Policy 11 (6), 630–638.

Fortuna, L.R., Tolou-Shams, M., Robles-Ramamurthy, B., Porche, M.V., 2020. Inequity and the disproportionate impact of COVID-19 on communities of color in the United States: the need for a trauma-informed social justice response. Psychological Trauma: Theory, Research, Practice, and Policy 12 (5), 443–445.

Frontstin, P., Woodbury, S.A., 2020. How Many Americans Have Lost Jobs with Employer Health Coverage During the Pandemic? The Commonwealth Fund. https://research.upjohn.org/externalpapers/90/.

Greene, T., Bloomfield, M.A.P., Billings, J., 2020. Psychological trauma and moral injury in religious leaders during COVID-19. Psychological Trauma: Theory, Research, Practice, and Policy 12 (S1), 143–145.

Griffin, B.J., Purcell, N., Burkman, K., Litz, B.T., Bryan, C.J., Schmitz, M., Willierme, C., Walsh, J., Maguen, S., 2019a. Moral injury: an integrative review. J. Trauma Stress 32, 350–362.

Griffin, B.J., Toussaint, L.L., Zoelzer, M., Worthington Jr., E.L., Coleman, J., Lavelock, C. R., McElroy, A., Hook, J.N., Wade, N., Sandage, S., Rye, M., 2019b. Evaluating the effectiveness of a community-based forgiveness campaign. J. Posit. Psychol. 14 (3), 354–361.

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

Harris, J.I., Park, C.L., Currier, J.M., Usset, T.J., Voecks, C.D., 2015. Moral injury and psycho-spiritual development: considering the developmental context. Spirituality in Clinical Practice 24 (4), 256–266.

Hayes, A.F., 2013. Introduction to Mediation, Moderation, and Conditional Process Analysis. New York, New York.

Hines, S.E., Chin, K.H., Levine, A.R., Wickwire, E.M., 2020. Initiation of a survey of healthcare worker distress and moral injury at the onset of the COVID-19 surge. Am. J. Ind. Med. 63 (9), 830–833.

Jinkerson, J.D., 2016. Defining and assessing moral injury: A syndrome perspective. Traumatology 22 (2), 122–130.

Lai, J., Simeng, M., Wang, Y., et al., 2020. Factors associated With mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open 3 (3), e203976.

Landry, M.D., Van den Bergh, G., Hjelle, K.M., Jalovcic, D., Tuntland, H.K., 2020. Betrayal of trust? The impact of the COVID-19 global pandemic on older persons. J. Appl. Gerontol. 39 (7), 687–689.

Litam, S.D.A., Balkin, R.S., 2020. Moral injury in health-care workers during COVID-19 pandemic. In: Traumatology. Advance online publication. https://doi.org/10.1037/trm0000290.

Litz, B.T., Stein, N., Delaney, E., Lebowitz, L., Nash, W.P., Silva, C., Maguen, S., 2009. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. Clin. Psychol. Rev. 29 (8), 695–706.
Maguen, S., Griffin, B.J., Copeland, L.A., Perkins, D.F., Richardson, C.B., Finley, E.P., Vogt, D., 2020. Trajectories of functioning in a population-based sample of veterans: contributions of moral injury, PTSD, and depression. Psychol. Med. 25, 1–10.
Mohsin, A.K.M., Hongzhen, L., Sume, A.H., Hussain, M.H., 2020. Analysis of the causes of moral injury in the outbreak of 2019-nCoV. Psychological Trauma: Theory, Research, Practice, and Policy 12 (S1), S162–S164.
Nash, W.P., Marino Carper, T.L., Mills, M.A., Au, T., Goldsmith, A., Litz, B.T., 2013. Psychometric evaluation of the Moral Injury Events Scale. Mil. Med. 178 (6), 646–652.
Niles, A.N., Woolley, J.D., Tripp, P., Pesquita, A., Vinogradov, S., Neylan, T.C., O'Donovan, A., 2020. Randomized controlled trial testing mobile-based attention-bias modification for posttraumatic stress using personalized word stimuli. Clin. Psychol. Sci. 8 (4), 756–772.
Oliver, S., Gargano, J., Marin, M., Wallance, M., Curran, K.G., Chamberland, M., McClung, N., Campos-Outcalt, D., Morgan, R.L., Mbaeyi, S., Romero, J.R., Talbot, H. K., Lee, G.M., Bell, B.P., Dooling, K., 2020. The advisory committee on immunization practices' interim recommendation for use of Pfizer-BioNTech COVID-19 vaccine – United States. MMWR Morb. Mortal. Wkly. Rep. 69, 1922–1924.
Purcell, N., Griffin, B.J., Burkman, K., Maguen, S., 2018. Opening a door to a new life": the role of forgiveness in healing from moral injury. Front. Psychiatr. 16 (9), 498.
Purcell, N., Koenig, C.J., Bosch, J., Maguen, S., 2016. Veterans' perspectives on the psychosocial impact of killing in war. Counsel. Psychol. 44 (7), 1062–1099.
Reynolds, S.J., Ceranic, T.L., 2007. The effects of moral judgment and moral identity on moral behavior: an empirical examination of the moral individual. J. Appl. Psychol. 92 (6), 1610–1624.
Sachdeva, S., Iliev, R., Medin, D.L., 2009. Sinning saints and saintly sinners: the paradox of moral self-regulation. Psychol. Sci. 20 (4), 523–528.
Salari, N., Hosseinian-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., Rasoulpoor, S., Khaledi-Paveh, B., 2020. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: a systematic review and meta-analysis. Glob. Health 16, 57.
Sammons, M.T., VandenBos, G.R., Martin, J., 2020. Psychological practice and the COVID-19 crisis: a rapid response survey. J. Health Soc. Pol. 46, 1–7.
Scheder, R.A., Mahapatra, M., Miller, J.G., 1987. Culture and moral development. In: Kagan, J., Lamb, S. (Eds.), The Emergence of Morality in Young Children. University of Chicago Press, Chicago, pp. 1–90.
Shay, J., 2014. Moral injury. Psychoanal. Psychol. 31, 182–191.
U. S. Census Bureau, 2020. U.S. Census Bureau QuickFacts, United States.
Usset, T.J., Gray, E., Griffin, B.J., Currier, J.M., Kopacz, M.S., Wilhelm, J.H., Harris, J.I., 2020. Psychospiritual developmental risk factors for moral injury. Religions 11 (10), 484.
Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., Schnurr, P.P.. The PTSD Checklist for DSM-5 (PCL-5) – Standard [Measurement instrument]. Available from. https://www.ptsd.va.gov/.
Williams, R.D., Brundage, J.A., Williams, E.B., 2020. Moral injury in times of COVID-19. J. Health Soc. Pol. 46, 65–69.
Williamson, V., Stevelink, S.A.M., Greenberg, N., 2018. Occupational moral injury and mental health: systematic review and meta-analysis. Br. J. Psychiatry 212 (6), 339–346.
Wisco, B.E., Marx, B.P., May, C.L., Martini, B., Krystal, J.H., Southwick, S.M., Pietrzak, R. H., 2017. Moral injury in U.S. combat veterans: results from the national health and resilience in veterans study. Depress. Anxiety 34 (4), 340–347.
Yeterian, J.D., Berke, D.S., Carney, J.R., McIntyre-Smith, A., St Cyr, K., King, L., Kline, N. K., Phelps, A., Litz, B.T., 2019. Members of the moral injury outcomes project consortium. Defining and measuring moral injury: Rationale, design, and preliminary findings from the Moral Injury Outcome Scale Consortium. J Trauma Stress 32 (3), 363–372.