Resilience and Meaning-and-Purpose 5-6 Months into the COVID-19 Disaster: The Moderating Role of Having a Pre-existing Mental Health Condition in a Cross-sectional Survey Study

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Table of Contents

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Abstract

Background: As with other natural disasters, including epidemics in recent history, rates of anxiety and depression increased significantly at the beginning of the COVID-19 pandemic. Studies of resilience and meaning and purpose during the early months of COVID-19 found that these positive psychology constructs are generally negatively associated with anxiety and depression. However, there are risk factors for resilience that may alter this association, such as having a pre-existing mental health condition.

Objective: Our goals were to examine the relationship between strengths-based psychological factors (resilience and meaning-and-purpose) and anxiety and depression symptoms, 5-6 months following the US COVID-19 emergency declaration (August-September, 2020) in a sample of adults in the Midwest.

Methods: Adults (?18 years of age) were recruited via flyers, emails, and word of mouth to participate in daily polls assessing attitudes about the pandemic and monthly surveys measuring anxiety, depression, resilience, and meaning-and-purpose. A study community advisory board identified local resources and recommended new poll questions to coincide with changes in pandemic trends. The current study examines mental health survey data from participants who enrolled between August 1–September 30, 2020.

Results: Participants (N=106; Asian (0.9%), Black (45.3%), Latine/Hispanic (6.6%), White (42.5%), Mixed/Multiple (2.8%), and Other (2.8%)) reported anxiety and depression in the mild ranges. In a regression analysis, meaning-and-purpose (P=.002) was significantly, negatively associated with anxiety, and both resilience (BRS; P=.02) and meaning-and-purpose (P<.001) were significantly, negatively associated with depression over and above relevant demographic covariates.

Additionally, the moderation between having a self-reported, pre-existing mental health condition and resilience (P=.01) was significantly associated with anxiety, such that those who reported a mental health condition tended towards greater anxiety as resilience increased, while those who did not report a mental health condition tended towards lower anxiety as resilience

increased.

Conclusions: Consistent with previous literature from the initial pandemic period, our data found that resilience and meaning-and-purpose were significantly, negatively associated with mental health outcomes. Furthermore, the association between resilience and anxiety was moderated by having a self-reported, pre-existing mental health condition. Therefore, in studying resilience in a disaster context, having a pre-existing mental health condition is a salient risk factor to consider. Findings specifically contribute to our understanding of resilience during a longer-term disaster (e.g., pandemic). Further research is warranted to better understand how the protective benefits of resilience may be differentially experienced by those with and without a pre-existing mental health condition.

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Keywords: Brief Resilience Scale; Meaning and Purpose; COVID-19; Disaster; mental health.

Abstract

Background: As with other natural disasters, including epidemics in recent history, rates of anxiety and depression increased significantly at the beginning of the COVID-19 pandemic. Studies of resilience and meaning and purpose during the early months of COVID-19 found that these positive psychology constructs are generally negatively associated with anxiety and depression. However, there are risk factors for resilience that may alter this association, such as having a pre-existing mental health condition.

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Additionally, the moderation between having a self-reported, pre-existing mental health condition and resilience (P=.01) was significantly associated with anxiety, such that those who reported a mental health condition tended towards greater anxiety as resilience increased, while those who did not report a mental health condition tended towards lower anxiety as resilience increased.

Conclusions: Consistent with previous literature from the initial pandemic period, our data found that resilience and meaning-and-purpose were significantly, negatively associated with mental health outcomes. Furthermore, the association between resilience and anxiety was moderated by having a self-reported, pre-existing mental health condition. Therefore, in studying resilience in a disaster context, having a pre-existing mental health condition is a salient risk factor to consider. Findings specifically contribute to our understanding of resilience during a longer-term disaster (e.g., pandemic). Further research is warranted to better understand how the protective benefits of resilience may be differentially experienced by those with and without a pre-existing mental health condition.

Introduction

The COVID-19 pandemic disaster had a major impact on adult mental health across the United States (US).[1] From April to December, 2020, clinically significant anxiety was reported to be present in 31.5 to 45.8% of adults, and clinically significant depression was present in 21.8 to 32.2% of adults.[2,3] This is a vast increase from previous 12-month estimates for generalized anxiety disorder and major depressive episodes (2.9% and 9.3% respectively).[2,4]

Elevations in depression and anxiety are consistent with previous epidemics. For example, during the SARS outbreak of 2003, anxiety and depression symptoms were reported in 12.6%[5] and 73.1% of general population samples,[6] respectively. In a review of 35 studies, Chau et al. found that, following the epidemic, those who recovered from SARS showed rates of anxiety and depression at 18.7% and 19.9%, respectively.[7]

Though increases in mental health symptoms following a pandemic is expected[1], we know less about resilience and other strengths-based factors such as meaning and purpose. In a recent study during the COVID-19 pandemic, Wong et al. found 72.8% of a global sample reported normal-to-high levels of resilience.[8] Factors related to resilience in a disaster context include older age and social support, while female gender, low socioeconomic status, loss of economic resources, and a pre-existing mental health condition are risk factors for developing psychological symptoms.[1,9-11] Pre-COVID-19-pandemic resilience has been associated with lower COVID-19-related anxiety and depression.[12,13] In one study of 1,270 older adults (age 55+), resilience was associated with better mental health outcomes at five subsequent timepoints between April and June, 2020.[14] With respect to having a sense of meaning and purpose (meaning-and-purpose), this was found to be a latent protective factor for developing symptoms, and negatively associated with anxiety and depression.[15]

Much of the data utilized to investigate these associations were collected during the first few months of the pandemic. Disaster-exposures typically are not prolonged events, with resilience and rapid recovery in functioning observed within 1-4 months following exposure.[9,16] It is therefore unclear if similar associations would persist after 5-6 months of continuous exposure, prior to effective treatments or vaccines, and while emergency governmental supports were expiring.[17-19]

The aim of the current study is to examine the relationship between strengths-based psychological factors (resilience and meaning-and-purpose) and anxiety and depression symptoms, 5-6 months following the US COVID-19 emergency declaration[17] (August-September 2020) in a sample of Midwestern adults. We hypothesized that resilience and meaning-and-purpose would have a significant, negative association with anxiety and depression over and above relevant sociodemographics, such as age, gender identity, racial identity, self-reported mental health condition, and neighborhood distress. We also hypothesized that these associations would be moderated by whether or not the participant reported a pre-existing mental health condition.

Methods

Data from the current study comes from a larger prospective cohort study conducted during the COVID-19 pandemic: ATTACH (Attitudes About COVID-19 and Health) with study cohorts in the US, United Kingdom (UK), and Mexico. The study design and methods were detailed previously by Hood et al.[20] Essentially, participants completed mental health and strengths-based measures once a month and daily poll questions about the COVID-19 pandemic (e.g., did you have difficulty following masking recommendations today?). The current study uses data (anxiety, depression, resilience, and meaning-and-purpose measures) from the US cohort collected in August-September, 2020.

Participants

Participants were recruited via flyers, cultural brokers, social media, websites and word of mouth. To ensure we had demographics similar to the region, we overrecruited Black participants. Participants were eligible if they were ages 18 and older, reported that they spoke English, resided in the tri-state region (Ohio-Kentucky-Indiana), and had access to a phone, computer, or tablet to complete measures electronically. All participants reviewed the informed consent form and provided their electronic signature before completing study measures. The ATTACH study was reviewed and found to be exempt by the main institution's Institutional Review Board.

Measures

Baseline sociodemographic data included age, gender, race/ethnicity, relationship status, education, employment, essential worker status, and caregiver status. Self-reported, pre-existing mental health condition (*mental health condition* hereafter) was collected as a yes-no question. Measures included in the analyses for the present study were the Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety-Adult Short Form (7-item), Patient Health Questionnaire-9 (PHQ-9), Brief Resilience Scale (BRS), and PROMIS Meaning and Purpose Short Form (4a). Distressed Community Index (DCI) scores were assigned based on zip code.[21] (See Table 1).

Data Analysis Plan

All analyses were conducted in Stata version 18.[22] Regression analyses were used to assess the relationship between BRS, PROMIS meaning and purpose, PROMIS anxiety, and the PHQ-9 scores, after controlling for relevant sociodemographic variables—neighborhood distress, gender identity, racial identity, and mental health condition. Next, regression models were run to assess the moderations between the following: resilience and mental health condition; meaning-and-purpose and mental health condition. All models used full information maximum likelihood estimation to account for missing data, with a robust variance estimator.

Results

Participant Characteristics

Participants (N = 106) were mostly female (74.5%), reported their racial identity was Asian (0.9%), Black (45.3%), Latine/Hispanic (6.6%), White (42.5%), Mixed/Multiple (2.8%), and Other (2.8%). Most reported employment (72.6%) and nearly half (43.6%) reported being married. There was representation from all five quintiles in the distribution of community distress; (See Table 1).

Table 1. Participant Characteristics (N = 106)[a-e]

Characteristic	Value	Characteristic	Value
Age in years (18-73), M (SD)	46.63 (14.22)	**Gender Identity, n (%)**	
Racial/Ethnic Identity, n (%)		Female	79 (74.5)
Asian	1 (0.9)	Male	25 (23.6)
Black, Non-Hispanic	48 (45.3)	Missing	2 (1.9)
Latine/Hispanic	7 (6.6)	**Caregiver Status, n (%)**	**34 (32.1)**
White, Non-Hispanic	45 (42.5)	Parent	30 (28.3)
Mixed/Multiple groups	3 (2.8)	Grandparent	3 (2.8)
Missing	2 (1.9)	Other	1 (0.9)
DCI Quintile, n (%)		**Relationship Status, n (%)**	

1-Resourced	26 (24.5)
2	16 (15.1)
3	15 (14.2)
4	24 (22.6)
5-Distressed	18 (17)
Missing	7 (6.6)
Mental Health Condition, n (%)	
Yes	17 (16)
No	86 (81.1)
Prefer not to say	1 (0.9)
Missing	2 (1.9)
Measure Scores, M (SD)	
PROMIS Anxiety[b]	55.27 (9.36)
Mental Health Cond.	63.10 (10.17)
No Mental Health Cond.	53.81 (8.54)
PHQ-9[c]	5.23 (5.16)
Mental Health Cond.	10.27 (6.78)
No Mental Health Cond.	4.33 (4.30)
Brief Resilience Scale[d]	3.76 (0.81)
Mental Health Cond.	3.02 (1.04)
No Mental Health Cond.	3.88 (0.70)
PROMIS Meaning & Purpose[e]	55.44 (10.18)
Mental Health Cond.	47.25 (14.32)
No Mental Health Cond.	56.89 (8.59)
In a relationship	20 (18.9)
Married	46 (43.4)
Single	36 (34)
Widowed	2 (1.9)
Missing	2 (1.9)
Education, n (%)	
< High School	2 (1.9)
High School	7 (6.6)
Some College	22 (20.8)
College Grad	36 (34)
Post Grad Degree	37 (34.9)
Missing	2 (1.9)
Employment Status, n (%)	
Employed	77 (72.6)
Unemployed	7 (6.6)
Disabled	3 (2.8)
Retired	6 (5.7)
Homemaker	3 (2.8)
Student	1 (0.9)
Other	3 (2.8)
Missing	6 (5.7)
Essential Worker, n (%)	
Yes	44 (41.5)
No	39 (36.8)
Missing	23 (21.7)

[a]Table 1 includes the total number in each group followed by the percentage in each group in parentheses for categorical variables. Age and Measure Scores are presented as mean (standard deviation). PROMIS=Patient Reported Outcomes Measurement Information System. DCI=Distressed Community Index. Mental Health Condition=self-reported, pre-existing mental health condition.

[b]PROMIS Anxiety Scoring: Less than 55=None to slight; 55.0-59.9=Mild; 60.0-69.9=Moderate; 70 and over=Severe. Total: n=101; Mental Health Cond., n=16; No Mental Health Cond., n=85. Test for significant difference: Mental Health Cond. mean was significantly higher, $t_{19.24}$=3.43, *P*=.003; 95%CI 3.61, 14.94.

[c]PHQ-9 Scoring: 0-4=None; 5-9=Mild; 10-14=Moderate; 15-19=Moderately Severe; 20-27=Severe. Total: n=99; Mental Health Cond., n=15; No Mental Health Cond., n=83. Test for significant difference: Mental Health Cond. mean was significantly higher, $t_{16.09}$=3.28, *P*=.005; 95%CI 2.10, 9.78.

[d]Brief Resilience Scale Scoring: Range 1-5; higher scores indicate greater resilience. Total: n=100; Mental Health Cond., n=15; No Mental Health Cond., n=84. Test for significant difference: Mental Health Cond. mean was significantly lower, $t_{16.30}$=-3.07, *P*=.007; 95%CI -1.45, -0.27.

[e]PROMIS Meaning & Purpose Scoring: The United States M(SD)=50(10); higher scores indicate greater meaning & purpose. Total: n=100; Mental Health Cond., n=15; No Mental

Health Cond., n=85. Test for significant difference: Mental Health Cond. mean was significantly lower, $t_{15.82}$=-2.53, *P*=.02; 95%CI -17.73, -1.55.

Regression and Moderation Analyses

Anxiety. Meaning-and-purpose was significantly, positively associated with PROMIS anxiety scores, b=-0.28, *P*=.001, 95%CI=-0.45, -0.11. BRS scores and sociodemographics were not significantly associated with anxiety.

The moderation between resilience and mental health condition was significantly associated with anxiety, b=-5.76, *P*=.01, 95%CI=-10.30, -1.21, such that there is a negative association between resilience and anxiety for those without a mental health condition, and a positive association between resilience and anxiety for those with a mental health condition. In the moderation model, resilience was significantly associated with anxiety, though in opposite directions for the two groups. The moderation for meaning-and-purpose was non-significant; (See Table 2, Figure 1).

Table 2. Regressions Predicting Anxiety[a-c]

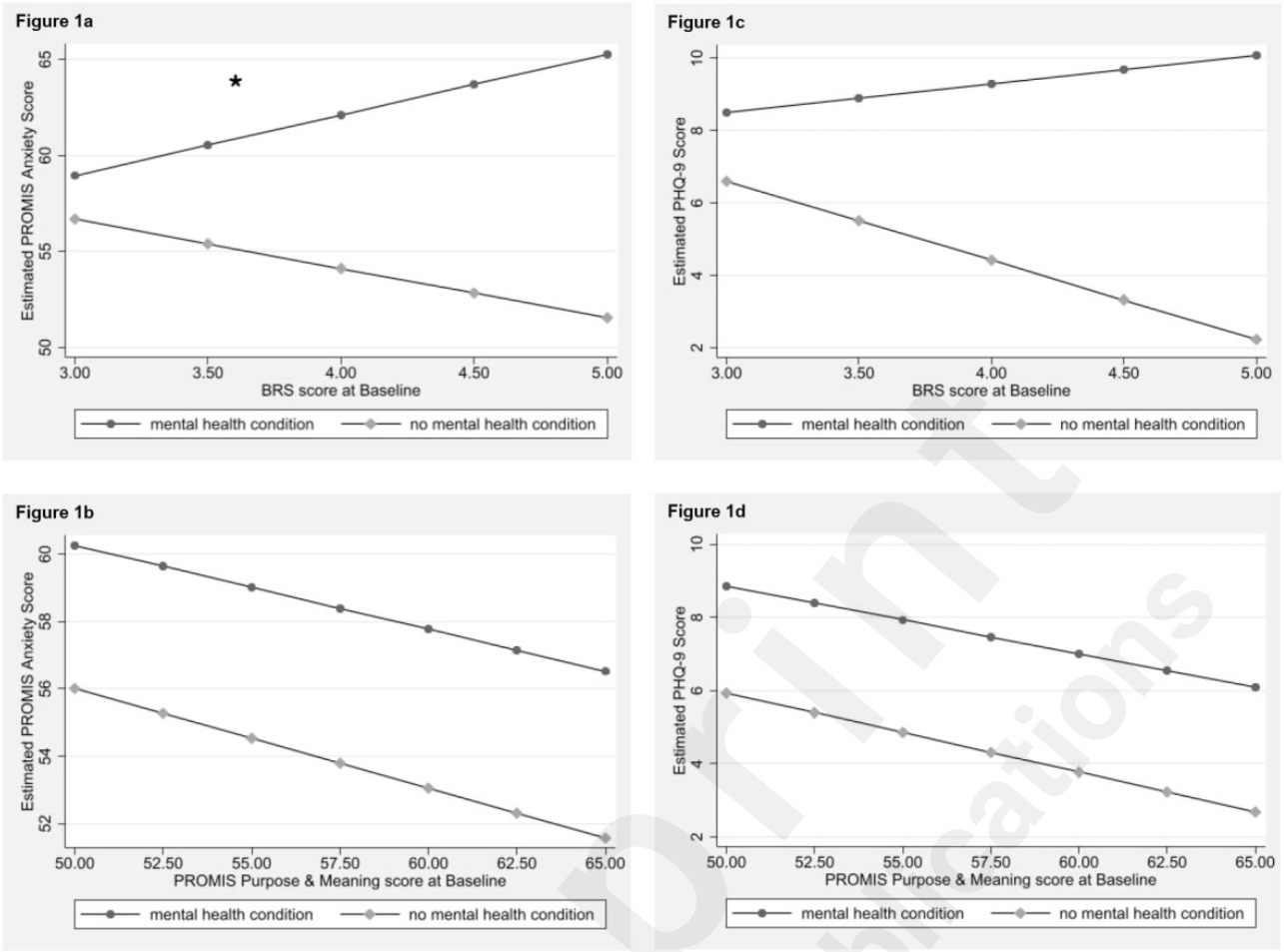
Predictor	Coefficient	SE	*P*	95%CI
Variable[b]				
Gender	-0.12	1.94	.92	-4.00, 3.60
Race	0.07	1.71	.97	-3.28, 3.42
Age	-0.12	0.06	.06	-0.24, 0.01
DCI	-0.14	1.76	.94	-3.59, 3.30
Mental Health Cond. (MHC)	-5.04	2.72	.06	-10.37, 0.28
Meaning & Purpose (M&P)	*-0.28*	*0.09*	*.001*	*-0.45, -0.11*
Resilience	-1.00	1.21	.41	-3.37, 1.37
Moderation[c]				
Resilience x MHC (Model 1)	*-5.76*	*2.32*	*.01*	*-10.30, -1.21*
M&P x MHC (Model 2)	-0.05	0.20	.82	-0.45, 0.35

[a]N=105. DCI=Distressed Communities Index. Mental Health Cond.=self-reported, pre-existing mental health condition. SE=standard error. 95%CI= 95% confidence interval. Significant associations are italicised.

[b]Gender is dichotomized female/male. Race is dichotomized White/Black. DCI is dichotomized categories 1-3 and 4-5. MHC is dichotomized yes/no whether someone has reported a pre-existing mental health condition. Significant predictors: M&P. Prediction trend, but non-significant: Age (lower age for higher anxiety symptoms), and MHC (pre-existing mental health condition for higher anxiety symptoms).

[c]Model 1 is inclusive of all predictors and a Resilience x MHC moderation effect (significant). Model 2 is inclusive of all predictors and a M&P x MHC moderation effect (non-significant).

Figure 1. Graphed Moderations[a]



[a]Figure 1 depicts self-reported mental health condition as a moderator between resilience or meaning-and-purpose and mental health outcomes (depression and anxiety symptoms): Top row (a, c) depicts moderation between resilience and mental health scores; bottom row (b, d) depicts moderation between meaning-and-purpose and mental health scores; left-hand column (a, b) depicts moderation with PROMIS anxiety scores; right hand column (c, d) depicts moderation with PHQ-9 depression scores. Graphs were made using Stata. Asterisk (*) denotes a significant moderation effect.

Depression. Meaning-and-purpose, b=-0.21, *P*<.001, 95%CI=-0.29, -0.13, and BRS scores, b=-1.38, *P*=.04, 95%CI=-2.67, -0.09 were both significantly associated with depression. Other sociodemographic variables were not significantly associated with depression. Moderation analyses were not significant, though the moderation for resilience and mental health condition was trending in the same pattern as with anxiety; (See Table 3, Figure 1).

Table 3. Regressions Predicting Depression[a-c]

Predictor	Coefficient	SE	*P*	95%CI
Variable[b]				
Gender	0.38	0.93	.68	-1.44, 2.21
Race	0.82	0.83	.32	-0.81, 2.44
Age	-0.01	0.03	.74	-0.07, 0.05
DCI	-0.01	0.76	.99	-1.50, 1.48
Mental Health Cond. (MHC)	-2.85	2.08	.17	-6.93, 1.23
Meaning & Purpose (M&P)	*-0.21*	*0.04*	*<.001*	*-0.29, -0.13*
Resilience	*-1.38*	*0.66*	*.04*	*-2.67, -0.09*

Moderation[c]				
Resilience x MHC (Model 1)	-3.06	1.95	.12	-6.88, 0.75
M&P x MHC (Model 2)	-0.04	0.12	.72	-0.29, 0.19

[a]N=105. DCI=Distressed Communities Index. SE=standard error. 95%CI= 95% confidence interval. Significant associations are italicised.

[b]Gender is dichotomized female/male. Race is dichotomized White/Black. DCI is dichotomized categories 1-3 and 4-5. MHC is dichotomized yes/no whether someone has reported a pre-existing mental health condition. Significant predictors: M&P and Resilience. Prediction trend, but non-significant: MHC (pre-existing mental health condition for higher depression symptoms).

[c]Model 1 is inclusive of all predictors and a Resilience x MHC moderation effect (similar trend as anxiety (Table 2), but non-significant). Model 2 is inclusive of all predictors and a M&P x MHC moderation effect (non-significant).

Discussion

The current study assessed the relationship between resilience, meaning-and-purpose, and anxiety and depression symptoms in Midwestern adults 5-6 months after the US COVID-19 emergency declaration. Consistent with data collected during the first few months of the pandemic,[15] findings indicated that meaning-and-purpose and resilience were both significantly associated with anxiety and depression, over and above sociodemographic factors. Previous disaster literature consistently points to the importance of resilience in individual outcomes following disaster events—exposure to which typically occurs within a shorter-term context.[9,11] COVID-19 studies indicate that, even with modest recovery in the months following lockdown, higher-than-normal anxiety and depression symptoms persisted well into this enduring disaster.[3,23] The present findings allude to the continued salience of both resilience and meaning-and-purpose for mental health outcomes within a longer-term disaster context.

Our data showed that having a pre-existing mental health condition significantly moderated the association between resilience and anxiety. This suggests that those with a pre-existing mental health condition may have a different experience during a pandemic with respect to anxiety or depression symptoms. For example, Castellvi et al. found significant differences in resilience based on mental health condition status (i.e., none, incidence, persistence, recovering), such that those experiencing a persistent mental health condition reported lower resilience.[24] It could be that those with a mental health condition will require additional, external supports to foster and benefit from resilience whereas those without a mental health condition are able to reap benefits from an internal sense of resilience. However, more research is needed to understand how having a mental health condition may impact individual resilience, especially in the context of long-term disaster exposures (e.g., a global pandemic).

Limitations and Future Directions

The study has several limitations. First, a small sample size from one geographic region limits generalizability. Next, cross-sectional data limits the ability to draw inferences over time. However, our sample was racially/ethnically diverse, with 55.7% of participants representing minoritized demographics. Furthermore, findings are consistent with longitudinal COVID-19 research (e.g., Brinkhof et al.[14]) which found that generally mental health improved over time, but that anxiety in particular was a precursor to poor mental health. Future research would benefit from a larger generalizable sample, as well as longitudinal data collection on resilience especially given the potential for resilience interventions (see Chen & Bonanno[25]). Parrott et al. show early stakeholder

validation for an online/hybrid resilience intervention focused on building community support and increasing sense of meaning.[26]

Conclusions

The current study found that 5-6 months into the COVID-19 pandemic, resilience and meaning-and-purpose were significantly, negatively associated with anxiety and depression symptoms. However, for resilience this relationship reversed if the individual reported having a pre-existing mental health condition; in that case, resilience was lower overall and did not demonstrate the same protective benefits at higher levels. This is an important consideration when designing interventions to facilitate resilience during future public health challenges, including disasters.

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Conflicts of Interest

The authors report no conflicts of interest.

Abbreviations

BRS: Brief Resilience Scale
COVID-19: coronavirus disease
DCI: Distressed Community Index
PHQ-9: Patient Health Questionnaire-9
PROMIS: Patient Reported Outcomes Measurement Information System

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Supplementary Files

Figures

The figure depicts graphs of self-reported mental health condition as a moderator between resilience or meaning-and-purpose and mental health outcomes (depression and anxiety symptoms): Top row (a, c) depicts moderation between resilience and mental health scores; bottom row (b, d) depicts moderation between meaning-and-purpose and mental health scores; left-hand column (a, b) depicts moderation with PROMIS anxiety scores; right hand column (c, d) depicts moderation with PHQ-9 depression scores. Graphs were made using Stata. Asterisk (*) denotes a significant moderation effect.