The effects of COVID-19 stressors and family life on anxiety and depression one-year into the COVID-19 pandemic

AliceAnn Crandall | Chantel Daines | Carl L. Hanson | Michael D. Barnes

Department of Public Health, Brigham Young University, Provo, Utah, USA

Correspondence
AliceAnn Crandall, Department of Public Health, Brigham Young University, 4103 LSB, Provo, UT 84602, USA. Email: ali_crandall@byu.edu

Abstract

The purpose of this study was to examine the effects of Coronavirus (COVID-19)-related stressors and family health on adult anxiety and depressive symptoms 1 year into the pandemic. The sample consisted of 442 adults living in the United States who were recruited via Amazon Mechanical Turk. Data were analyzed using multiple logistic regression. Results indicated that compared to a sample 1 month into the pandemic, participants in the current sample reported worse family health and increases in both positive and negative perceptions of the pandemic on family life and routines. COVID-19 stressors and perceived negative effects of the pandemic on family life increased the odds for moderate-to-severe depression and anxiety while having more family health resources decreased the odds for depression and anxiety symptoms. Participants reported lower odds for worse depression and anxiety since the beginning of the pandemic when they reported more positive family meaning due to the pandemic. The results suggest a need to consider the impact of family life on mental health in pandemics and other disasters.

Keywords
anxiety, COVID-19, depression, family health, stressors
Stressors can have an impact on family systems (Yoneda & Davila, 2007). Family stressors in turn have been shown to have a significant impact on individual family members’ health and functioning (Frone et al., 1997; Garasky et al., 2009; Morales & Guerra, 2006; Sullivan et al., 2021; Wadsworth & Achenbach, 2005). Coronavirus (COVID-19) is now being understood as a traumatic stressor event with emerging evidence that it is contributing to post-traumatic stress disorder (PTSD) and mental health challenges such as anxiety and depression among individuals (Bridgland et al., 2021). As of November 2021, there have been over 46.6 million cases of COVID-19 and 755,000 deaths in the United States (Centers for Disease Control & Prevention, 2021a). COVID-19 cases peaked in the United States in January 2021, and the daily counts began to decline as temperatures increased and a growing number of people were vaccinated, but the Delta variant of the virus has caused cases again to rise. With hopes that the spread of COVID-19 will be mitigated, there is an increasing focus on the impacts of the pandemic on daily life.

Many of the statistics relating to COVID-19 are presented at the individual level, but the COVID-19 pandemic has drastically affected families (Ones, 2020). Many families have struggled to afford basic needs due to income and job loss (Karpman et al., 2020). As children were sent home from schools to do remote learning, parents found themselves taking on new and different roles beyond caregiving such as ensuring that their child still received an education (Bornstein, 2020). Within households, family members found themselves in closer proximity to each other for longer periods than they were accustomed to (Ones, 2020). Increased family stressors, such as unemployment and sharing cramped spaces, led to increased domestic violence reports in some cities, with victims having no place to go to escape the trauma (Buttell & Ferreira, 2020). Despite these numerous negative effects on families, anecdotal evidence suggests that many families appreciated increased opportunities to reconnect with each other (Wilson, 2020).

COVID-19 as a traumatic stressor has led to economic and employment challenges and relocation for families. In March 2020, when individual states implemented quarantine, social distancing, and face-covering mandates, there was a drastic and immediate effect on the unemployment rate. April 2020 saw the highest unemployment rate since the Great Depression at 14.8%, up from the March 2020 rate of 4.4% for full-time employment (Falk et al., 2021). Women’s unemployment rate peaked at 36.6% and minorities experienced higher peak rates compared to Whites (Falk et al., 2021). As full-time employment decreased, part-time employment jumped to 24.5%. Related to relocation, 1 in 20 adults in the United States moved either permanently or temporarily during the pandemic (Bowman, 2021; Cohn, 2021). About one-third of those who moved reported financial reasons related to COVID-19 and 17% moved due to job loss (Cohn, 2021). Because of college campuses closing and instituting remote learning, young adults were most likely to move and often moved in with the family (Cohn, 2021).

Prior research during infectious disease pandemics, including COVID-19, has shown that sudden and prolonged economic difficulties can lead to increased anxiety and depression (Catalano et al., 2011; Phillips & Nugent, 2014). Previous epidemics have resulted in increased mental health issues for the survivors, such as with the Ebola outbreak in West Africa (Nyanfor & Xiao, 2020) and the SARS outbreak in Hong Kong (Cheng et al., 2004; Mak et al., 2009). Early studies on COVID-19 indicate increasing rates of anxiety and depression, especially among those that are survivors of COVID-19. In a study of 400 COVID-19 survivors, over half, 56%, had experienced some type of mental health issue, 42% anxiety, 31% depression, 40% insomnia, and 28% PTSD, with women suffering more from anxiety and depression (Mazza et al., 2020). Mental health issues were not only related to COVID-19 survivors but were also felt among the general population. In a global study of 1653 respondents, 59% of the respondents met the criteria for clinically significant anxiety
(scores above 40 using the State-Trait Anxiety Inventory) and 39% experienced moderate depressive symptoms (scores 10 or higher using the Patient Health Questionnaire; Varma et al., 2021). Meta-analyses of mental illness during the early part of the COVID-19 pandemic indicated depression rates between 25% and 34% of adults and anxiety prevalence at approximately 32% (Bueno-Notivol et al., 2021; Salari et al., 2020). In a recent study examining several COVID-19-related stressors including job loss, death of someone close to you, and financial problems, those individuals that had experienced a major life change due to COVID-19 were >3 times more likely to experience depressive symptoms (mild to severe) compared to before COVID-19 (Ettman et al., 2020). Individuals with lower socioeconomic resources were particularly at risk for depression (Ettman et al., 2020).

Theoretical framework for the study

The ABC-X model of Family Stress Theory (McCubbin & Patterson, 1983) helps to explain the impact of traumatic stressors on families. As per this theory, the resources and meaning that families place on a traumatic stressor such as the COVID-19 pandemic may be important to predicting depression and anxiety symptoms. The ABC-X model posits that crises and stressors that families face affect (A) the family's resources to manage the stress (B) and the subjective meaning that the family develops from the crisis (C). Together, A, B, and C produce the outcome (X) at the individual or family level. For purposes of this study, A, the crisis/stressor, are COVID-19 stressors (job/income loss, relocation, and getting COVID-19); B, the family's resources, including the family's health. Family health allows families to function and fulfill their roles and responsibilities (Crandall et al., 2020); subjective meaning, C, includes the positive and negative meaning that families derive from COVID-19 such as appreciating more time spent with family or feeling more annoyed with family members perhaps due to being in more close and constant quarters. The outcome, X, measured in this study is adult depression and anxiety. A study conducted in the United States 1 month into social distancing guidelines found that more family internal and material resources were associated with lower rates of anxiety and depression. However, the perception of negative family meaning because of COVID-19 (e.g., feeling more annoyed with family members due to spending more time with them) was associated with higher rates of anxiety and depression (Crandall et al., 2021). The effects of family resources and meaning-making on mental health may have changed as the pandemic has progressed and the toll on families, for better or worse, has increased.

Aims and hypotheses

The study examines the effect of COVID-19 stressors on family life and its overall impact on adult depression and anxiety symptoms 1 year into the pandemic. The following three research questions were examined: (1) Has COVID-19 contributed to declining family health and perceived family meaning over time? The research team hypothesized that average family health and positive family meaning scores would be lower 12 months into the pandemic compared to a sample 1 month into COVID-19. Furthermore, we hypothesized that participants would report more negative family meaning (as measured by attributions of family life during COVID-19) compared to a sample 1 month into COVID-19. (2) Do COVID-19-related stressors increase depression and anxiety? We hypothesized that more COVID-19-related stressors would increase current symptoms of depression and anxiety and perceived worsening of mental health since the COVID-19 pandemic began. (3) Are family health and perceived family meaning associated with depression and anxiety? We posited that family health resources and overall family health would protect against worsening depression and anxiety. Additionally,
we hypothesized that positive family meaning would protect against depression and anxiety while negative family meaning would increase depression and anxiety.

**METHODS**

The current study was conducted in mid-to-late March 2021, 1 year after social distancing guidelines were imposed in the United States. Sample recruitment took place on Amazon Mechanical Turk (MTurk). Participants were 445 adults ages 18 and older who were living in the United States. Three adults had missing data on some key demographic indicators, therefore the final sample for this study included 442 adults. To ensure that the sample represented a variety of socioeconomic statuses, 10% of the sample was required to have a household income of less than $25,000/year. For research question 1, data from the current sample were compared to data from the sample recruited one month into social distancing (Crandall et al., 2021). Though different samples, both samples were U.S.-based, included adult participants only, and were recruited via MTurk. A fuller description of the methods of the sample collected 1 month into social distancing is reported elsewhere (Crandall et al., 2021). Table 1 includes a description of the current sample, with demographic comparisons to the sample that was recruited 1 month after social distancing guidelines were imposed in most states. The current sample was slightly younger and less likely to be female, married, and to report their race as White compared to the prior sample.

**TABLE 1** Descriptive statistics of two samples, 1-month and 12-months into COVID-19 restrictions in the United States

| Sample characteristics                              | 12-month sample (N = 442) | 1-month sample (N = 499) | Significant differences between samples |
|-----------------------------------------------------|---------------------------|--------------------------|----------------------------------------|
| Participant age in years (R: 18 – 77) – M (SD)      | 37.29 (10.57)             | 41.63                    | ***                                    |
| Female                                              | 38.24                     | 52.10                    | ***                                    |
| Married or cohabitating                             | 64.93                     | 71.46                    | *                                      |
| Bachelor's degree or higher                         | 73.98                     | 68.26                    | NS                                     |
| White                                               | 71.27                     | 80.43                    | **                                     |
| Lived with members of family                         | 78.28                     | 83.03                    | NS                                     |
| Children living in home                              | 47.96                     | 50.10                    | NS                                     |
| Income <$20,000/year                                 | 17.42                     | 15.57                    | NS                                     |
| Positive or likely COVID-19                         | 31.67                     | –                        | –                                      |
| COVID-19 job or income instability                   | 61.09                     | 40.52                    | ***                                    |
| Moved due to COVID-19                               | 38.32                     | –                        | –                                      |
| # of COVID-19 stressors (R: 0 – 3) – M (SD)          | 1.31 (1.11)               | –                        | –                                      |
| Moderate or severe depression                        | 48.19                     | 22.36                    | ***                                    |
| Moderate or severe anxiety                           | 42.99                     | 23.15                    | ***                                    |
| Perceived worse depressive symptoms since COVID-19 began | 38.69                     | –                        | –                                      |
| Perceived worse anxiety symptoms since COVID-19 began | 43.21                     | –                        | –                                      |

*p < 0.05; **p < 0.01; ***p < 0.001.
A description of the study was available for viewing by registered workers on MTurk who met the qualifications based on their MTurk profile information. Potential participants were directed to a Qualtrics survey link to participate in the study. After providing consent, participants completed a 15-minute survey. Following survey completion, participants received a $2.00 incentive that was posted to their MTurk account. The Brigham Young University institutional review board approved the study.

Amazon MTurk is a crowdsourcing web service that allows researchers to recruit participants who meet their criteria (Paolacci et al., 2010). MTurk workers (e.g., participants) can see a list of tasks (e.g., surveys) for which they qualify. The list includes a description of the task, the estimated time to complete the task, and the compensation amount. Researchers can refuse payment for the poor quality of work, such as straight-lining of responses or completing the survey in an improbably short amount of time. Previous research indicates that the demographic characteristics of MTurk users are similar to other survey services, and MTurk samples have strong generalizability to national samples (Coppock, 2019; Huff & Tingley, 2015).

Measures

Mental health

Depression and anxiety were measured using the 9-item Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) and 7-item Generalized Anxiety Disorder-7 scale (GAD-7; Spitzer et al., 2006), respectively. Both scales have response options on a 4-point Likert scale ranging from Not at all to Nearly every day. Items were summed for each scale. Scores of 10 or higher, indicating moderate-to-severe depression or anxiety, were coded as 1, and scores lower than 10 were coded as 0 (Kroenke et al., 2001; Spitzer et al., 2006). Prior studies have indicated strong reliability for the PHQ-9 ($\alpha = 0.89$; Kroenke et al., 2001) and GAD-7 ($\alpha = 0.92$; Spitzer et al., 2006). Reliability was likewise high for the current sample, with both the depression and anxiety items having a Cronbach’s alpha of 0.94.

To understand subjective changes in mental health, after completing the PHQ-9, participants were asked the following question: “The previous questions are about symptoms that can be related to depression. Do you feel that you have experienced more depressive symptoms since the COVID-19 pandemic began (March 2020)?” Participants could report more feelings of depression, fewer feelings of depression, that their feelings of depression had not changed, or that they were unsure. Likewise, after answering the GAD-7, participants were asked if their symptoms of anxiety had changed since the COVID-19 pandemic began. Responses for both items were dichotomized to 1 “symptoms had gotten worse” and 0 “symptoms had not gotten worse.”

Subjective family meaning

Participants responded to 23 items about their positive and negative perceptions of how COVID-19 social distancing and social isolation affected their family life and their feelings about their family. For example, participants were asked to rate changes in feelings and attitudes about family relationships, time spent together, methods for connecting, and family routines and traditions. Some items related to members of their household only (asked only of participants who lived with family) while others were pertinent only to family members outside of their household. Twenty of the 23 items came from a previously validated scale (Crandall et al., 2021), and three new items were developed to examine new family routines and traditions because of COVID-19. Each question was asked on a five-point Likert scale ranging from (1)
strongly disagree to (5) strongly agree. The original scale included two factors: positive family meaning and effects (PFME) and negative family meaning and effects (NFME). Cronbach’s alpha in prior samples indicated good internal reliability at 0.85 for PFME and .88 for NFME for the original scale (Crandall et al., 2021). Internal reliability for both scales in the current sample was also high (PFME: $\alpha = 0.92$; NFME: $\alpha = 0.94$). Table S1 includes the family meaning items, mean scores, and a comparison of average scores in the current sample versus the sample 1 month into social distancing.

Family health

Family health is defined as “a resource at the level of the family unit that develops from the intersection of the health of each family member, their interactions and capacities, as well as the family's physical, social, emotional, economic, and medical resources” (Weiss-Laxer et al., 2020). This construct includes four subscales: family social and emotional health processes, family healthy lifestyle, family health resources, and family external social supports (Crandall et al., 2020). Prior research indicated that family health resources, but not the other family health constructs, were protective against depression and anxiety 1 month into the pandemic (Crandall et al., 2021). Therefore, in the current study the 9-item family health resources subscale from the Family Health Scale (FHS) and the FHS-Short Form (FHS-SF) as a general measure of family health were included (Crandall et al., 2020). Because the full family health resources subscale was included, the three items relating to family health resources were excluded from the FHS-SF, making for a total of seven items in the short-form that measured family social and emotional health processes, family healthy lifestyle, and family external social supports. Response options were on a 5-point Likert Scale ranging from (1) strongly disagree to (5) strongly agree. Reliability has been demonstrated to be high for family health resources ($\alpha = 0.82$) and the 10-item FHS-SF ($\alpha = 0.84$; Crandall et al., 2020). The current sample likewise had strong internal reliability (family health resources: $\alpha = 0.93$; 7-item FHS-SF: $\alpha = 0.84$). Table S2 includes the family health items, mean scores, and a comparison of average scores in the current sample versus the sample 1 month into social distancing.

COVID-19 stressors

Participants were asked if they had had COVID-19, whether they had moved due to COVID-19, and whether their employment or income had been affected because of COVID-19 (e.g., if they had lost a job, had reduced hours or income, and/or had to take on additional jobs to make ends meet). The three stressors were summed for a total COVID-19 stressors score ranging from 0 to 3 points.

Covariates

As a variety of demographic factors can affect one's experience of family life and mental health, several controls were included in the analyses. These controls included: participant gender (1 = female; 0 = male), age in years, marital status (1 = married/cohabitating; 0 = not married/cohabitating), education (1 = bachelor's degree or higher, 0 = > bachelor's degree), race (1 = White; 0 = non-White), whether or not they lived with family (1 = lived with at least one family member; 0 = did not live with family), household income, and currently having a child under 18 years old (1 = had a child under age 18 years; 0 = did not have a child under 18 years).
Analytic methods

Data were analyzed in Stata version 16. Item means and proportions were calculated for both the 12-month sample (data collected in March 2021) and the 1-month sample (data collected in April 2020). Demographic item means and subjective family meaning item means were compared between samples using the Wilcoxon Rank-Sum (Mann–Whitney) test. To examine correlations of study variables in the 12-month sample, Pearson's pairwise correlations were conducted for continuous data and tetrachoric correlations for dichotomous variables. Separate multiple logistic regression models were estimated for the outcomes of depression, anxiety, worsening depression since COVID-19 began, and worsening anxiety since COVID-19 began. Multiple logistic regression models were only run using data from the 12-month sample.

RESULTS

Participants were on average 37 years old, 28% were female, 65% were married, 74% had a Bachelor's degree or higher, 71% reported their race as White, and 17% had a household income less than $20,000/year. Nearly one-third (32%) of participants had had COVID-19, 38% had moved due to COVID-19, and 61% had experienced job or income instability due to COVID-19. The average number of COVID-19 stressors was 1.3. Nearly half (48%) of participants reported moderate/severe depressive symptoms, 43% reported moderate/severe anxiety, and 50% of the sample reported moderate/severe anxiety and/or depressive symptoms (Table 1). Table 2 includes pairwise correlations for the study variables.

Family health and family meaning 1 month and 12 months into the pandemic

Compared to participants in the sample 1 month after COVID-19 restrictions began, participants in the current sample reported higher or similar mean scores across the PFME items, with participants generally expressing strong agreement with each item. However, across all NFME items participants in the current sample reported higher negative family meaning due to COVID-19 than the prior sample, with participants reporting modest agreement or neutrality with most items (see Table S1).

Family health scores were significantly worse or stayed the same in the current sample compared to the prior sample. In particular, family health resources were lower in eight out of the nine items (Table S2).

COVID-19 stressors and mental health

Each additional COVID-19-related stressor increased the odds of depression (OR: 1.58, 95% CI: 1.10–2.27) and anxiety (OR: 1.59 95% CI: 1.12–2.25) in the 2 weeks before taking the survey (Table 3). However, COVID-19 stressors were not associated with perceptions of worsening depression/anxiety since the start of the pandemic.

Family health, family meaning, and mental health during the COVID-19 pandemic

Family health resources resulted in decreased odds for moderate-to-severe depression and anxiety in the prior 2 weeks (ORs for both depression and anxiety: 0.20, 95% CI: 0.11–0.35).
### TABLE 2  Correlation matrix\(^a\)

|       | 1  | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   |
|-------|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 Depression     | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2 Anxiety        | 0.97* | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3 Depression increase\(^b\) | 0.42* | 0.44* | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4 Anxiety increase\(^b\) | 0.24* | 0.34* | 0.75* | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5 COVID stressors | 0.59* | 0.58* | 0.20* | 0.16* | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |
| 6 Family health—general | -0.12* | -0.09 | -0.06 | 0.05 | 0.01 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |
| 7 Family health—resources | -0.75* | -0.73* | -0.23* | -0.16* | -0.69* | 0.09 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |
| 8 Positive family meaning | 0.26* | 0.26* | -0.03 | 0.00 | 0.38* | 0.57* | -0.36* | 1.00 |     |      |      |      |      |      |      |      |      |      |
| 9 Negative family meaning | 0.66* | 0.65* | 0.32* | 0.25* | 0.63* | -0.10* | -0.80* | 0.24* | 1.00 |     |      |      |      |      |      |      |      |      |
| 10 Female        | -0.08 | -0.13 | -0.01 | -0.06 | -0.07 | -0.02 | 0.08 | -0.01 | -0.10* | 1.00 |     |      |      |      |      |      |      |      |
| 11 Age           | -0.11* | -0.13* | -0.04 | -0.00 | -0.09* | 0.11* | 0.15* | 0.02 | -0.09 | 0.11* | 1.00 |     |      |      |      |      |      |      |
| 12 Married       | 0.49* | 0.48* | 0.05 | 0.03 | 0.40* | 0.21* | -0.39* | 0.50* | 0.28* | 0.13 | 0.03 | 1.00 |     |      |      |      |      |      |
| 13 BS degree     | 0.39* | 0.38* | 0.10 | 0.10 | 0.29* | 0.12* | -0.29* | 0.31* | 0.32* | -0.13 | -0.05 | 0.45* | 1.00 |     |      |      |      |
| 14 White         | 0.00 | -0.01 | 0.00 | -0.02 | -0.11* | 0.06 | 0.04 | -0.07 | -0.05 | -0.06 | 0.10* | -0.08 | -0.17 | 1.00 |     |      |      |
| 15 Live with family | 0.45* | 0.45* | 0.06 | 0.01 | 0.27* | 0.23* | -0.31* | 0.48* | 0.12* | 0.18* | -0.08 | 0.86* | 0.27* | -0.18* | 1.00 |     |      |
| 16 Income        | 0.05 | 0.07 | -0.05 | -0.04 | 0.14* | 0.34* | -0.10* | 0.41* | 0.13* | -0.01 | 0.03 | 0.45* | 0.38* | 0.05 | 0.30* | 1.00 |      |
| 17 Child <18 years | 0.51* | 0.48* | -0.00 | 0.02 | 0.42* | 0.25* | -0.40 | 0.49* | 0.32* | 0.07 | -0.02 | 0.91* | 0.50* | -0.18* | 0.38* | 0.84* | 1.00 |      |

\(^*p < 0.05\).

\(^a\)Tetrachoric correlations for dichotomous variables; Pearson’s pairwise correlations for continuous variables.

\(^b\)Items based on participant recall of whether anxiety or depressive symptoms had increased, and should be interpreted as perceptions of depression/anxiety changes and not actual changes in symptoms.
TABLE 3  Multiple logistic regression of the effects of COVID-19 stressors, family health, and family meaning-making on mental health 12-months into the COVID-19 pandemic, \( N = 442 \)

|                                      | Depression   | Perceived worse depression due to COVID-19 | Anxiety | Perceived worse anxiety due to COVID-19 |
|--------------------------------------|--------------|-------------------------------------------|---------|----------------------------------------|
| COVID-19 stressors                   | **1.58** (1.10–2.27) | 1.18 (0.91–1.55)                          | **1.59** (1.12–2.25) | 1.20 (0.92–1.56) |
| Family health (general)              | 0.75 (0.44–1.29)   | 1.29 (0.90–1.86)                          | 0.79 (0.47–1.36)   | **1.75** (1.22–2.49) |
| Family health resources              | **0.20** (0.11–0.35) | 1.19 (0.82–1.71)                          | **0.20** (0.11–0.35) | 1.24 (0.87–1.76) |
| Positive family meaning-making       | 1.00 (0.62–1.61)   | **0.68** (0.49–0.94)                      | 0.95 (0.58–1.55)   | **0.71** (0.52–0.97) |
| Negative family meaning-making       | **1.83** (1.14–2.92) | **2.44** (1.71–3.49)                      | **1.78** (1.10–2.87) | **2.01** (1.45–2.79) |
| Controls                             |               |                                           |         |                                        |
| Female                               | 0.94 (0.50–1.78)   | 1.18 (0.76–1.83)                          | 0.76 (0.41–1.41)   | 0.99 (0.65–1.50) |
| Age                                  | 1.00 (0.97–1.03)   | 1.00 (0.98–1.02)                          | 0.99 (0.96–1.02)   | 1.00 (0.98–1.02) |
| Married or cohabitating              | 0.58 (0.22–1.51)   | 1.02 (0.51–2.04)                          | 0.72 (0.27–1.93)   | 1.11 (0.58–2.15) |
| Bachelor’s degree or higher          | 0.92 (0.42–1.98)   | 1.03 (0.59–1.79)                          | 0.81 (0.36–1.79)   | 1.09 (0.64–1.86) |
| White/Caucasian                      | 1.84 (0.92–3.67)   | 1.11 (0.69–1.79)                          | 1.53 (0.79–2.96)   | 0.97 (0.61–1.53) |
| Live with family                     | 2.09 (0.84–5.15)   | 1.93 (0.96–3.85)                          | 1.87 (0.73–4.78)   | 1.23 (0.64–2.36) |
| Income                               | 0.82 (0.66–1.03)   | 0.91 (0.79–1.05)                          | 0.87 (0.71–1.08)   | 0.89 (0.78–1.02) |
| Child under 18 years                 | 1.60 (0.69–3.73)   | 0.58 (0.32–1.06)                          | 1.02 (0.44–2.36)   | 0.73 (0.42–1.30) |

95% confidence intervals provided in parentheses. Bolded values are significant at \( p < 0.05 \).
General family health was not associated with current depression or anxiety symptoms, but it was associated with increased odds for perceived worsening of anxiety symptoms since the pandemic began (OR: 1.75; 95% CI: 1.22–2.49). The positive family meaning was associated with decreased odds for perceiving that depression (OR: 0.68, 95% CI: 0.49–0.94) and anxiety (OR: 0.71, 95% CI: 0.52–0.97) had worsened during the pandemic. The negative family meaning was associated with increased odds for experiencing moderate-to-severe depression (OR: 1.83; 95% CI: 1.14–2.92) and anxiety (OR: 1.78; 95% CI: 1.10–2.87) and for perceiving worse depression (OR: 2.44; 95% CI: 1.71–3.49) and anxiety (OR: 2.01; 95% CI: 1.45–2.79) compared to before the pandemic. When accounting for COVID-19 stressors, family health, and perceived family meaning, demographic covariates were not associated with mental health (Table 3).

**DISCUSSION**

The COVID-19 pandemic has significantly affected adult mental health in the United States. Rates of mental illness in the current sample (~62% male) were about double that found in a sample 1 month into COVID-19 (Crandall et al., 2021), suggesting that as the pandemic progressed the stressors associated with the pandemic took a heavy toll on the mental health of adults. COVID-19-related stressors and negative family meaning were risk factors for more depression and anxiety symptoms while greater family health resources protected against mental health problems.

**Family well-being and mental health**

Consistent with our first hypothesis, family health was negatively affected by the pandemic. In particular, family health resources were lower in the current sample recruited 12 months into the pandemic compared to a sample recruited 1 month into the pandemic. The one exception to this related to the item about having adequate housing, where there was no difference between the two samples. Given that there was legislation that protected people from being evicted from their homes during the first year of the pandemic (Centers for Disease Control & Prevention, 2021b), this is one possible explanation for why the pandemic did not affect the housing resources of families. Consistent with hypothesis 3, higher family health resources substantially decreased the odds for both depression and anxiety in the current sample though family health resources were not associated with perceived worsening of depression and anxiety symptoms compared to before the pandemic. Family health resources include material (e.g., having adequate housing and money left over after bills are paid) and internal resources (e.g., help-seeking efficacy). Prior research indicates that socioeconomic indicators and help-seeking efficacy have implications for mental health (Joshi et al., 2017; Seidler et al., 2016), though the directionality can be challenging to interpret due to the cross-sectional nature of the data. While decreased resources may cause more strain leading to more depression/anxiety, depression/anxiety symptoms may also be linked with more difficulty in accessing and increasing family resources.

General family health was slightly lower in the current sample compared to the prior sample, particularly on items relating to family social and emotional health processes and helping family members seek healthcare services. One explanation for decreased family support in helping family members seeking healthcare is that some elective services were not available and numerous studies indicate that many people were more hesitant to access healthcare services during the pandemic (De Wilton et al., 2020; Hartnett et al., 2020). Additionally, family members who did not live in the same household may have been less likely to support one another in seeking services due to social distancing requirements. Despite lower overall family
health on several items, general family health had a limited impact on anxiety and depression. Surprisingly, better family health was associated with higher odds of perceiving anxiety symptoms as having gotten worse since the beginning of the pandemic after controlling for all other family variables, COVID-19 stressors, and demographic factors. One possible explanation for this is that those perceiving more anxiety may also seek more support from their families. Longitudinal data that allows for more objective measurement of changes to anxiety and depression would be valuable in further teasing out this relationship.

Surprisingly, subjective family meaning average scores were higher for both positive and negative family meaning in the current sample compared to the sample at 1 month. These results indicate that positive and negative family meaning during COVID-19 are not mutually exclusive. As family members spent more time together during the pandemic, participants appeared to appreciate and feel closer to their family and at the same time had more opportunities to be annoyed with family members. Positive family meaning during COVID-19 was not associated with current levels of anxiety and depression, but it was protective against participant perception of worsening of depression/anxiety since the start of the pandemic. Providing social support to families may assist them with their perceptions of stressful life events, thus influencing psychosocial morbidity. Mellon and Northouse (2001) have concluded that greater social support for families during times of health-related stress is related to increased levels of positive family meaning. The provision of such support with families rather than to or for families is a primary focus of family-centered positive psychology (Sheridan & Burt, 2009).

On the other hand, negative family meaning during COVID-19 was strongly associated with increased odds for moderate-to-severe depression and/or anxiety and with higher odds for perceiving that their anxiety/depression had gotten worse. These findings are consistent with the ABC-X model, which suggests that family meaning (perceptions) influence whether a stressor such as COVID-19 becomes an actual crisis for the family. Family meaning can act as a self-fulfilling prophecy (Rosino, 2016) where families who perceive COVID-19 as a crisis are more likely to experience COVID-19 as a crisis. Additionally, previous research has confirmed the link between family crises situations and psychological morbidity such as anxiety and depression (Areia et al., 2019; Kavanaugh et al., 2018; Newland et al., 2013; Scaramella et al., 2008).

COVID-19 stressors and mental health

Consistent with hypothesis 2, the more COVID-19-related stressors that a participant reported the higher their odds for anxiety and depression. These results are consistent with findings in a study that took place from April to June 2020, which found that increased income shocks due to the pandemic were associated with higher rates of depression (Donnelly & Farina, 2021). Additionally, other research has demonstrated that stressful life events influence the onset and course of mental health issues (Brown, 1998; Kendler et al., 1999; Shadrina et al., 2018). Research has further demonstrated that this relationship is buffered by an individual's genetic makeup (Caspi et al., 2003). In addition, and as purported by the diathesis-stress model, the likelihood of developing depression and anxiety is contingent on the interaction between individual vulnerability or predisposition and elevated levels of stress (Bebbington, 1987). In the current study, however, stressors were not associated with the perceived worsening of symptoms.

Policy and intervention implications

The most prominent policy implications during the COVID-19 pandemic and recovery have largely centered on national, state, and local governmental response (e.g., stimulus checks,
reopening the economy, migration, partial and full closures, and redirecting the use of social funding sources). Policy responses also include many other sectors such as schools, universities, businesses, and healthcare or clinical settings (Han et al., 2020). Policy responses varied. Some policies were voluntary and others were forced, much of it due to political influences (Gollwitzer et al., 2020). The most important COVID-19 mitigation policies related to this study include addressing negative mental health consequences, responding to the economic downturn, and addressing social isolation. Considering prior disasters and pandemics, the mental health impact of COVID-19 is likely to outlast the physical health impact of the pandemic (Fong & Iarocci, 2020). For instance, lingering service needs in mental health and substance abuse, relationship abuse, veteran and senior care, and school-based mental health are some of the needed areas for ongoing attention. Many of these needed areas were concerns before the pandemic but were often worsened as a result of the pandemic due to isolation, unemployment, underemployment, uninsured, underinsured groups, and partisanship (Scheffer et al., 2020). However, while mental health challenges are likely more pervasive and whose consequences are yet to be fully known, government and market decision-makers not only implement policy, but they also appeal to emotions in an attempt to legitimize policy responses and influence public reactions, for good or bad. For example, policy drivers may help draw attention to mental health, destigmatize and sensitize hot issues, engender trust or fear in the way they respond to uncertainty. Policy responses, for good or for bad, may favor family and individual needs or intentions to consider homeschooling, self-care in response to long isolation, and the need for online consultation services in response to mental challenges (Weible et al., 2020). This study illustrates that while individual-level policy needs continue, the family-level areas are increasingly important. To be effective, policy responses cannot be static or unchanging and need to be reassessed and adjusted over time (Greer et al., 2020).

Given the potential long-term effects that the pandemic may have on mental health, implementing effective family-level strategies at the clinical level will be important going forward. For therapists, family-centered positive psychology may be a useful framework (Sheridan & Burt, 2009) to support families in crisis to find positive meaning and develop or access family health resources. Family-centered positive psychology promotes the identification and development of strengths and capacities in the family system and individual members (Sheridan et al., 2004). Guiding principles within this framework include a focus on family processes and not just outcomes, using family strengths to mobilize family resources, focusing on needs identified by the family rather than by therapists or other outsiders, promoting the acquisition of new skills in the family based on family readiness, and strengthening family internal and external social supports (Sheridan et al., 2004).

LIMITATIONS AND CONCLUSION

The current study involved cross-sectional data analyses. Thus, causality cannot be determined based on the results. The sample was over 60% male, and thus results should be considered in the context of a predominantly male sample. Another important limitation is that we compared mean scores of family health and meaning-making between the current sample surveyed 12 months after the pandemic began with another sample recruited 1 month into the pandemic, but the samples varied on some important demographic characteristics that may have influenced their responses. Finally, participant perceptions of worsening anxiety and depression symptoms were each based on a single question. Prior research indicates that forgetting prior episodes of depression is common among adults, though recall improves for more severe and longer-lasting prior symptoms (Wells & Horwood, 2004). Because the measures were based on single items using cross-sectional data of participants comparing current mental health to their recall of past mental health symptoms, responses should be interpreted
as participant's subjective view of changes in anxiety and depressive symptoms and not actual changes. Longitudinal data examining depressive and anxiety symptoms is important to understanding true changes in mental health. Despite the limitation of these measures, we feel that it was valuable to understand individual perceptions of how their mental health has changed over time.

Compared to a sample 1 month into the pandemic, the current sample (data collected 12 months into the pandemic) experienced more depression and anxiety and reported having fewer family health resources. Respondents reported that their families had been able to find both negative and positive meaning from the pandemic. More stressors relating to COVID-19 and more negative family meaning-making from the pandemic were all associated with higher odds of experiencing depression and/or anxiety. However, those who reported more family health resources—such as material resources, internal coping resources, and help-seeking efficacy—reported 80% lower odds for experiencing moderate-to-severe mental health problems. These findings highlight the important role of and need for family-level policies to help support mental health, especially during stressful national and global events such as the COVID-19 pandemic.

CONFLICT OF INTEREST
None.

ORCID
AliceAnn Crandall https://orcid.org/0000-0002-6547-1378
Michael D. Barnes https://orcid.org/0000-0002-5734-4512

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