



RESEARCH ARTICLE

ANXIETY AND DEPRESSION
ASSOCIATION OF AMERICA WILEY

Living in the midst of fear: Depressive symptomatology among US adults during the COVID-19 pandemic

Kevin M. Fitzpatrick | Casey Harris | Grant Drawwe

Department of Sociology and Criminology,
University of Arkansas, Fayetteville, Arkansas**Correspondence**Kevin M. Fitzpatrick, Department of Sociology
and Criminology, University of Arkansas,
Fayetteville, AR 72701.
Email: kfitzpa@uark.edu**Funding information**National Science Foundation, Division of Social
and Economic Sciences, Grant/Award Number:
2027148**Abstract**

Background: The current study examines interrelationships between social vulnerability, individual stressors, social and psychological resources, and depressive symptomatology among US adults during the current coronavirus disease 2019 (COVID-19) pandemic.

Methods: Using an online survey platform, a poststratified (by age, gender, race, income, and geography), representative sample ($n = 10,368$ adults) is used in the analysis.

Results: On average, sample respondents report Center for Epidemiological Studies Depression (CES-D) Scale symptomatology nearly a point higher than the often used cutoff score for clinical caseness (16+); one-third of respondents had CES-D scores higher than 25. Multiple regression results show elevated levels of depressive symptomatology among the socially vulnerable (women, Hispanic, unmarried, not working). Those persons expressing heightened COVID-19 fear and moderate to high levels of food insecurity report more depressive symptoms than persons with less fear and low or no food insecurity. All three of the resource variables (mastery of fate, strength of ties, and optimism) are significant and in the negative direction.

Conclusions: In a snapshot, the data provide an important point prevalence assessment of adult depressive symptoms during the current public health crisis. Results highlight the significance of vulnerability and individual stressors in the wake of the COVID-19 pandemic. In addition, the analysis affirms the importance of access to social and psychological resources to combat heightened fear and anxiety that persons report during the current pandemic.

KEYWORDS

COVID-19 pandemic, depression, fear, stressors and resources

1 | INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) has been on the epidemiological watch list since early January of 2020 with an initial outbreak in the Chinese province of Wuhan. Since then, COVID-19 has become a pandemic itself (World Health Organization, 2020), spreading to over 200 countries/territories, and becoming a declared national public health emergency as it continues to grow exponentially across all 50 states and Washington, DC (Dong, Du, &

Gardner, 2020). For a virus that has been present for less than 6 months, the United States has witnessed the emergence of new levels of fear, erratic individual social and behavioral responses (e.g., panic buying, household goods hoarding), and subsequent panicked reactions in response to the significant health risks that the novel coronavirus poses for individuals, their families, and communities. Beyond individual perceptions and reactions to COVID-19, there has been significant systemic impact resulting in the development of a "national stressor" unlike any that we have seen in the modern era.

Even with Congress passing three different stimulus packages in an effort to stem the tide of significant social and economic fallout, unemployment rolls continue to expand, small businesses are closing their doors, and the housing market has all but come to a standstill.

With more than 100,000 lives claimed, it is not surprising that rapidly changing health, social, and economic conditions have led to socio-emotional fallout as a result of the new level of strain and stress on US residents. Early reports coming out of China, Europe, and North America confirm significant mental health consequences tied to heightened levels of fear, perceived health risks, and an overwhelming sense of dread that is tied to dramatic increases in virus-related morbidity and mortality around the world (Extbarria, Santamaria, Picaza-Gorrochategui, & Idoiaga-Mondragon, 2020; de Girolamo et al., 2020; Huang & Zhao, 2020; Mazza et al., 2020; Pollara Strategic Insights, 2020; Qui et al., 2020; Sønderskov, Dinesen, Santini, & Østergaard, 2020; Stankovaska, Memedi & Dimitrovski, 2020; C. Wang et al., 2020; Zhang et al., 2020). This perception, real or not, has the potential to manifest itself in a way that can heighten fear and produce negative mental health outcomes for certain individuals (Kaiser Family Foundation, 2020; Pollara Strategic Insights, 2020).

1.1 | An assessment framework

Using a traditional stressor and resource framework, this paper explores a set of individual-level factors that we believe are important correlates of mental health outcomes, including depressive symptomatology, among adults during the current pandemic. The emphasis on stressors and resources draw from a well-established literature documenting the impact of psychosocial factors on health throughout the life course (e.g., Lin, Dean, & Ensel, 1986; McLeod, Horwood, & Fergusson, 2016; Thoits, 2010). This framework typically finds exposure to certain types of individual stressors erode health, often by diminishing positive self-concept and leading to symptomatological expressions, such as depression (Pearlin, Menaghan, Lieberman, & Mullan, 1981). In addition, the framework proposes that the presence of resources may soften the impact of these stressors (Lin et al., 1986; Pearlin et al., 1981; Thoits, 2010). While some have characterized resources as merely the inverse of risk, we conceptualize them as qualitatively distinct in their capability to manage or adapt to stressors (e.g., Fitzpatrick & LaGory, 2011; Fitzpatrick, Piko, & Wright, 2005). In sum, stressors and resources intersect in infinitely possible combinations to shape the everyday lives of persons, making them either vulnerable to, or protected against negative mental health outcomes like depression. Thus, understanding which stressors and resources are most important for a post-COVID adult population becomes crucial to implementing successful policy aimed at improving their mental health outcomes in the current—and in future—public health crises.

In response to the general research call for more targeted mental health research (e.g., Asmundson & Taylor, 2020; Holmes, O'Connor, Hugh Perry, Tracey, & Wessely, 2020), we propose an examination of

depressive symptomatology among a group of nationally sampled US adults during the COVID-19 pandemic. While we acknowledge the importance of other mental health outcomes, we focus our attention on a collection of symptoms that is detectable with easy to administer screening instruments and that are critical for establishing overall prevalence and vulnerability necessary for the development of targeted treatment (Vilagut, Forero, Barbaglia, & Alonso, 2016).

Prior research identifies particular population subgroups that have been found to be more likely to report depressive symptoms, particularly in the midst of disasters and public health crises (e.g., Fitzpatrick & Spialek, 2020; Sønderskov et al., 2020; Y. Wang, Di, Ye, & Wei, 2020; C. Wang et al., 2020). While there have been some contradictory findings to these patterns, typically this study observes that women, unemployed, low-income, and those living in minority communities are more at risk for exposure to stressors. These groups often have depleted resources, and are therefore more likely to experience depressive symptomatology than their counterparts. As such, we propose an examination of how depressive symptoms vary between individuals in social groups with specific social vulnerabilities as identified in this prior literature. Specifically, we *anticipate, given the findings from earlier work, that female, unmarried, Hispanics, and unemployed persons have higher levels of depressive symptoms compared to their counterparts during the novel coronavirus pandemic.*

In addition, from the extant work in the general stressor and natural disaster literatures (e.g., Aneshensel Carol, 1992; Fitzpatrick & Spialek, 2020; Galea, Merchant, & Lurie, 2020; Pearlin et al., 1981; Tracy, Norris, & Galea, 2011), we know that there are a number of stressors that account for additional variation in negative mental health symptomatology. It is our intent to examine some of these factors more closely in the context of this public health crisis. Specifically, we focus on the manner in which subjective COVID-19 fear, food insecurity, and physical health problems exacerbate depressive symptoms, in addition to the social vulnerabilities identified above. Thus, *we expect to find that in general, stressors have a positive relationship with depressive symptomatology.*

Finally, research documents the mitigating role of a wide range of coping strategies, social resources, social ties, and psychological resources in helping to mitigate the impact of stressors on mental health outcomes (e.g., Fitzpatrick, 2016; Fitzpatrick & Willis, 2018; Pearlin & Schooler, 1978; Thoits, 2006). These resources have been found to minimize stress and negative life circumstances that people experience, particularly during a public health crisis like the current COVID-19 pandemic. As such, *we expect that both social and psychological resources (mastery of fate, optimism, and strength of social ties) have a negative relationship with depressive symptoms.*

2 | METHODS

2.1 | Data

A representative sample of 10,368 adults (aged 18 and over) provides the data for the current analysis. An online survey was released

on March 23, 2020 through Qualtrics, Inc., to a national opt-in panel of US residents that participated in the Institutional Review Board-approved survey. Questions range from general fear and anxiety related to COVID-19 to social and behavioral health changes, as well as physical/mental health assessments. The final sample of 10,368 was populated on March 30, 2020 and poststratification weighted across gender, age, race, income, and geography (state). This poststrata weighting ensures an equitable contribution to the estimates of respondents across their individual demographic and geographic strata relative to their representation in the overall adult population of the United States.

2.2 | Measurement

This study focuses on the role of specific vulnerabilities, stressors, and resources as correlates of depressive symptomatology in the context of uncertainty during the COVID-19 pandemic in the United States in mid-to-late March 2020. By the time, the survey responses were fully collected (March 30), there were 161,575 confirmed novel coronavirus cases in the United States, an increase of about 3.7 times as many cases as when the survey was released ($n = 43,421$; Dong et al., 2020).

2.2.1 | Dependent variable

Depressive symptoms are measured using the Center for Epidemiological Studies Depression Scale (CES-D), which contains 20 items that capture a variety of affect and somatic dimensions (Beekman et al., 1997; Radloff, 1977). For our purposes, in part due to time and space constraints on the survey, we only used 11 items from the CES-D scale to assess depressive symptomatology. Different revisions to this scale have been validated in prior research using a variety of populations in different settings (Missine, Vandeviver, Van de Velde, & Bracke, 2014; Y. Wang, Shen, & Hurwicz, 2017; Willis & Fitzpatrick, 2019). The shortened CES-D scale used here was weighted by 1.8 (the number of items in the original measure [20] divided by the number of items in our shortened [11] measure). Weighting allows for comparison with the psychometric properties of other studies that have used the full 20-item questionnaire. The scale was reliable $\alpha = .94$.

2.2.2 | Social vulnerabilities

We examine several social and demographic subgroups (covariates) that prior research has shown to be related to depressive symptomatology in the context of public health crises and natural disasters (e.g., Gallacher, Bronsterng, Palmer, Fone, & Lyons, 2007; Liu et al., 2012). In particular, research indicates these key subgroups vary in levels of mental health outcomes, particularly as it relates to the stressors and resources examined in the current analysis. For the

current analysis, we include gender (1 = female); race (1 = White), marital status (1 = unmarried), Hispanic origin (1 = Hispanic), and work status (1 = not working, unemployed/laid off).

2.2.3 | Stressors

We examine three individual stressors. The first one is a subjective assessment of fear. While there are a number of strategies used to assess generalized fear and anxiety in individuals (Kogan & Edelstein, 2004; Tzeng & Yin, 2008), these measurement strategies often utilize single items that could be a useful screening tool to further examine what is at the root of the fear and its manifestations. In the current study, our interest is in giving as little guidance as possible to the respondent as to how they should think about it or frame it; rather, we simply ask respondents to numerically rate on a sliding scale of 0–10 “how they would currently rate their fear about COVID-19.”

The second stressor was a physical symptoms health inventory that asked respondents whether or not they are currently experiencing a list of any of a list of 27 physical symptoms. This symptom scale has been found to be both a valid and reliable strategy for assessing current physical symptomatology, particularly among at-risk subgroups and its impact on their mental health (e.g., Irwin, LaGory, Ritchey, & Fitzpatrick, 2008). The scale was moderately reliable $\alpha = .77$

The third and final stressor is *food insecurity* using the standard, 10-item United States Department of Agriculture Adult Food Security Module (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2019). Food insecurity has been noted elsewhere as important in determining mental health consequences, generally finding that food insecure persons report elevated depressive and anxiety symptoms (e.g., Martin, Maddocks, Chen, Gilman, & Colman, 2016; Nagata, Palar, Gooding, Garver, & Whittle, 2019). Respondents are asked a range of questions that assess their adequate access to healthy food and the barriers present that may be impacting that access. All affirmative responses, including “some months” or “almost every month” are coded as 1. Respondents who answer in the affirmative to 3 or more items are considered food insecure, while those who answer in the affirmative to 2 or fewer items are considered food secure. The recoded scale was reliable $\alpha = .91$.

2.2.4 | Resources

We consider three resource variables in the analysis. The first is a social resource variable, *strength of social ties* that attempts to assess how connected respondents see themselves to other persons in their social network (Lin et al., 1986). The scale uses three items, including if the respondent felt they had enough companions, had enough friendships, and not seeing their close friends was a problem. For the current study, the scale was reliable $\alpha = .88$.

A second resource variable that is included is *mastery of fate*, reflecting “the extent to which people see themselves as being in control of the forces that importantly affect their lives” (Pearlin et al., 1981). We use a scale developed by Pearlin and Schooler (1978) where higher scores indicate greater mastery of fate and internal locus of control. For the current sample, the scale was reliable $\alpha = .84$.

Because optimism has been shown to mitigate the effects of stress and fear generally (Aspinwall & Brunhart, 1996; Scheier & Carver, 1985), we include it here and measure it using the *Life Orientation Test-Revised* 10-item scale (Scheier, Carver, & Bridges, 1994). This scale was reliable $\alpha = .80$.

Analytical strategy

The data for this paper are analyzed using SPSS 25.0; p values of less than .05 are considered statistically significant. First, descriptive analyses are conducted to provide details on the characteristics of the sample with means, standard deviations, and percentages (presented when appropriate) of the model variables. Second, the prevalence of depressive symptoms (categories) is examined between categorical variables and interval level variables. We examine both χ^2 (categorical with categorical) and F tests (continuous with categorical) to determine statistical significance between groups. Finally, we examine multivariate regression models using CES-D as the dependent variable and in successive models, the individual and group effects of social vulnerabilities, stressors, and social/psychological resources. Unstandardized and standardized regression coefficients are presented along with one-tailed t tests for each of the hypothesized variables.

3 | RESULTS

We present descriptive statistics for both the CES-D and the independent variables used in the analysis in Table 1. While the focus of our analysis is not descriptive, the newness of this data provides an important snapshot of a postweighted representative sample of US adults currently experiencing a public health crisis. We suspect descriptive findings will look different in the months ahead. Nevertheless, we provide here a general overview of the sampled population along with a description of their stressors and resources.

It is important to note that among this sample of adults, there is an elevated average of CES-D symptom scores. The average respondent reported symptoms above the clinical caseness criteria with a mean of 16.9. Importantly, the sample is poststratification weighted, with additional demographic and geographic controls used to ensure nationally representative case contribution across age, gender, race, and income groups. The current sample has a near equal balance of gender, ~61% of respondents are white, roughly 54% persons are unmarried, 18% Hispanic origin, 19% reported they are unemployed, laid off or furloughed, and the average age of respondents was 47 years old (standard deviation = 18). Interestingly, the mean self-reported subjective fear score is nearly 7 on a scale of

0–10. This suggests that the average respondent is more than slightly fearful of COVID-19; nearly 30% report their subjective fear score to be 8 and above.

The majority of respondents report only a couple of physical health symptoms, while more than one-third reported experiencing moderate to high levels of food insecurity (food insecure) in the last 3 months. It appears that despite the level of fear and food insecurity reported, sample respondents are accessing both psychological and social resources, which are functioning as expected.

To more closely examine the differences in depressive symptomatology across socially vulnerable groups, as well as stressors and resources, Table 2 provides both mean and percentage differences between groups. For categorical comparisons, we use a χ^2 test, while in the cases of categorical with interval level variables, we employ a one-way analysis of variance (F test). This more nuanced presentation helps to show how differently respondents are when divided across the three CES-D groupings low (<16); moderate (16–25), and high (25+). The table highlights significant percentage differences across categories for all the variables. In the majority of cases, there is a clear pattern emerging with higher depressive symptoms among socially vulnerable groups, those experiencing higher levels of COVID-19 fear, persons who are food insecure, and persons with fewer resources.

Next, in Table 3, we construct a series of regression models to examine the independent effects and collective influence of social vulnerabilities, COVID-19 fear, and other stressors, as well as social/psychological resources on depressive symptomatology. In Model 1, the majority of social vulnerabilities are statistically significant, with females, unmarried respondents, Hispanics, and persons not working reporting higher depressive symptoms than their counterparts. Those vulnerabilities remain significant once we control for individual COVID-19 fear and both physical health symptoms and food

TABLE 1 Descriptive statistics for model variables ($n = 10,368$)

	Percent	Mean	SD
Dependent variable			
CES-D (0–60)	–	16.94	15.69
Social vulnerabilities			
Gender (1 = female)	51.02%	–	–
Race (1 = White)	60.76%	–	–
Marital status (1 = unmarried)	54.69%	–	–
Hispanic origin (1 = Hispanic)	18.21%	–	–
Work status (1 = not working)	19.61%	–	–
Risks			
Subjective fear (0–10)	–	6.57	2.80
Physical symptoms (0–23)	–	1.65	2.48
Food insecurity (1 = food insecure)	38.30%	–	–
Social and psychological resources			
Strength of social ties (3–15)	–	11.43	3.98
Mastery of fate (7–27)	–	19.81	3.97
Optimism (14–50)	–	33.56	4.92

Abbreviations: CES-D, Center for Epidemiological Studies Depression; SD, standard deviation.

TABLE 2 Mean CES-D scores and bivariate associations between depression levels and model variables (*n* = 10,368)

CES-D range					
	Mean CES-D	(Number of cases)			<i>p</i> ^a
		<16	16–25	25+	
		(5,807)	(1,612)	(2,949)	
Social vulnerabilities					
Gender					
(1 = Female)	17.9	48.1%	56.4%	54.3%	.001
(0 = Male)	15.9	51.9%	43.6%	45.7%	$\chi^2 = 18.1$
Race					
1 = White	15.7	60.0%	10.1%	29.9%	.001
0 = Non-White)	18.8	40.0%	89.9%	71.1%	$\chi^2 = 28.3$
Marital status					
1 = Unmarried	19.9	48.0%	58.9%	64.6%	.001
0 = Married	14.4	52.0%	41.1%	35.4%	$\chi^2 = 257.3$
Hispanic origin					
1 = Hispanic	21.3	14.3%	19.9%	24.2%	.001
0 = Non-Hispanic	16.0	85.7%	81.1%	75.7%	$\chi^2 = 158.3$
Work status					
1 = Not working	21.6	14.8%	23.7%	26.4%	.001
0 = Working	15.8	85.2%	76.3%	73.6%	$\chi^2 = 218.5$
Risks					
Subjective fear (0–10)	–	6.2	6.8	7.2	.001 <i>F</i> = 12.4
Physical symptoms (0–23)	–	1.0	2.7	3.1	.001 <i>F</i> = 182.3
Food insecurity					
1 = Food insecure	25.7	20.9%	43.8%	65.6%	.001
0 = Food secure	11.5	79.1%	56.2%	34.4%	$\chi^2 = 1,928.2$
Social and psychological resources					
Strength of social ties (3–15)	–	13.0	10.8	8.6	.001 <i>F</i> = 2,176.2
Mastery of fate (7–27)	–	21.4	19.0	16.4	.001 <i>F</i> = 1,724.2
Optimism (14–50)	–	33.8	32.9	33.1	.001 <i>F</i> = 199.2

Abbreviations: ANOVA, analysis of variance; CES-D, Center for Epidemiological Studies Depression. ^a χ^2 Analysis was used to test for differences between categorical variables and depression groupings, and a one-way ANOVA (*F* test) was used to test for differences between continuous variables and depression groupings.

insecurity, while race becomes significant with the addition of these controls. As expected, stressors have a positive, statistically significant impact on depressive symptoms where persons reporting greater fear, more physical health symptoms, and food insecurity are more depression-symptomatic than their counterparts. With the addition of the individual stressors, 30% of the variation in depressive symptomatology was accounted for by social vulnerabilities and these stressor variables.

The final model (Model 3) adds social and psychological resources. Again, we find that these variables are all statistically significant and in the expected negative direction. Respondents with greater optimism, mastery of fate, and a greater strength of social

ties, report fewer depressive symptoms than their counterparts. All of the risk variables remain significant and positive. Social vulnerabilities also remain consistent as they were in Table 1 where non-whites report more depressive symptoms once the resources are introduced than their white counterparts. With the addition of the resource variables in the final model, the explained variation is ~51%.

4 | DISCUSSION

We believe this is the first empirical study examining the inter-relationships among social vulnerabilities, individual stressors, and

TABLE 3 Depressive symptomatology multiple regressions ($n = 10,368$)

Model variables	Model 1 b (B)	Model 2 b (B)	Model 3 b (B)
Social vulnerabilities			
Gender			
1 = Female	1.6 (.05)**	.76 (.02)**	.79 (.03)**
Race			
1 = White	.46 (.01)*	1.0 (.03)**	-.53 (.02)*
Marital status			
1 = Unmarried	3.6 (.12)**	2.6 (.08)**	.28 (.01)
Hispanic origin			
1 = Hispanic	4.9 (.12)**	3.1 (.08)**	2.6 (.06)**
Work status			
1 = Not working	4.5 (.11)**	1.7 (.04)**	1.2 (.03)**
Risks			
Subjective fear		-.80 (.14)**	-0.56 (.10)**
Physical symptoms		1.6 (.26)**	-0.93 (.15)**
Food insecurity			
1 = Food insecure		11.1 (.34)**	-5.2 (.16)**
Social and psychological resources			
Strength of social ties			-1.5 (-.35)**
Mastery of fate			-1.0 (-.26)**
Optimism			-0.14 (-.04)**
Constant	12.05	1.33	50.98
<i>Adjusted R</i> ²	.05***	.30***	.51***

Note: One-tailed t tests, ** $p < .01$, * $p < .05$; R^2 change *** $p < .001$.

social/psychological resources and their individual and collective influence on depressive symptomatology for a sample of adults in the US at the beginning of the COVID-19 pandemic. While this study is exploratory, it directs our attention to the importance of understanding the intersection of stressors and resources in the mental health outcomes of adults during a public health crisis like the one currently being experienced.

There are three central findings in the current study worth highlighting. One, COVID-19 fear was high among sampled respondents and, regardless of what was introduced in subsequent regression models, its independent influence on depressive symptomatology remained strong. The elevated levels of depressive symptoms are similar to what others have recently reported (e.g., Stankovaska et al., 2020; C. Wang et al., 2020; Zhang et al., 2020). One study in particular, examines stress, anxiety, and depressive symptoms among a sample of Italian residents, and in all three cases, they report elevated symptom levels (Mazza et al., 2020). In the case of depressive symptomatology, similar to what we find even though the instruments are different, post-COVID-19 symptoms in the high and very high range are considerably different than what is typically found in the adult nonclinical (pre-COVID-19) populations (Mazza et al., 2020).

Second, we note that resources matter. Both social and psychological resources had a strong and negative influence on depressive symptomatology, regardless of social vulnerabilities or

individual stressors. This finding is important, particularly in the midst of a public health and natural disaster crisis, where we would expect that resources like these can make a difference in people's lives and their felt emotions during a crisis. Typically, persons who are socially isolated might struggle during these types of crises and the presence of either psychological or social resources to help mitigate the negativity during these events become critical.

Finally, food insecurity emerged as a critical depressive symptom stressor during the COVID-19 public health crisis. Hoarding and panic buying became the norm early in the pandemic, particularly among persons who were more likely to have the additional resources to make the purchases. The results have been empty shelves and a depletion of resources for those that are more food insecure generally. We also know that during a public health crisis like the COVID-19 pandemic, nonprofit agencies that are typically open to the public are either closed or operating on severely limited hours. Thus, our finding that food insecurity was positively associated with depression may be reflective of the fact that a large number of service providers that often fill the gap for food insecure residents are experiencing significant reduction in donations during public health crises or may be having some difficulty in staffing their operations that are generally volunteer-driven. This particular finding underscores the need for resilience and emergency preparedness to address basic need acquisition for those who require basic food and supplies during a national health crisis like the current pandemic.

Centrally, those resiliency resources matter for mental health, like depression, as much as they do for physical and social health outcomes (e.g., Martin et al., 2016).

4.1 | Study limitations

As a first limitation, this cross-sectional study represents a snapshot of survivors and their mental health status at a single point in time, ~3 months into the public health crisis that is the current COVID-19 pandemic. Other studies have found that while symptomatology and related psychological trauma can be heightened during these types of crises (Rajkumar, 2020; Sønderskov et al., 2020; Y. Wang et al., 2020; Zhang et al., 2020), a more careful, nuanced longitudinal analyses may find symptomatology looking vastly different at varying points during and after the crisis. Second, given the limitations of the survey strategy, it is likely that a number of important indicators are left out, especially since the necessarily rapid nature of our data collection meant we were unable to ask full batteries of questions, and by design, were limited in the number of stressors and resources that we could examine. While we acknowledge this, important work regarding the desire to improve the comprehensiveness of measuring some of these factors, we were significantly limited in terms of the access and time that we had ask survivors to engage with the online survey. Finally, while we made every attempt for this to be a random, representative sample of adults living in the United States, we acknowledge that while generalizable to US adults, we should still be cautious when generalizing our findings to other populations for which the pandemic broadly—and mechanisms of fear, food insecurity, and resources specifically—might operate in unique ways.

Nevertheless, despite these and other limitations, we have provided important “first of its kind” findings that explore mental health, stressors/resources, and social vulnerabilities among adult survivors in the middle of perhaps the most important public health disaster of the present time. Clearly, additional work exploring the nexus of public health disasters and mental health symptomatology should continue. Work needs to continue to focus on who is vulnerable, what makes them vulnerable, and what protective factors and resources can act as mitigators in that exposure to stress and personal risk. We believe the current study makes an important contribution to that literature, though work remains to be done.

ACKNOWLEDGMENT

This study was supported by the National Science Foundation SES#2027148.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

Data pertaining to this publication will be available with all identifiers removed after the 3-year period of sequestered data based on the author's agreement with the National Science Foundation. Data will

be made available in SPSS format. In addition to data, all publication, research briefs, and Infographics will reside on the Community and Family Institute website; cfi.uark.edu.

ORCID

Kevin M. Fitzpatrick  <http://orcid.org/0000-0002-8802-1142>

REFERENCES

- Aneshensel Carol, S. (1992). Social stress: Theory and research. *Annual Review of Sociology*, 18, 158.
- Asmundson, G. J. G., & Taylor, S. (2020). Coronaphobia: Fear and the 2019-nCoV outbreak. *Journal of Anxiety Disorders*, 70, e102196.
- Aspinwall, L. G., & Brunhart, S. M. (1996). Distinguishing optimism from denial: Optimistic beliefs predict attention to health threats. *Personality and Social Psychology Bulletin*, 22, 993–1003.
- Beekman, A., Deeg, D., Van Limbeek, J., Braam, A. W., De Vries, M. Z., & Van Tilburg, W. (1997). Criterion validity of the center for epidemiologic studies depression scale (CES-D): Results from a community-based sample of older subjects in the Netherlands. *Psychological Medicine*, 27, 231–235.
- Coleman-Jensen, A, Rabbitt, MP, Gregory, CA, & Singh, A. (2019). Household food security in the United States in 2018. (Report No. ERR-270). U.S. Department of Agriculture, Economic Research Service.
- Dong, E., Du, H., & Gardner, L. (2020). An interactive web-based dashboard to track COVID-19 in real time. *Lancet Infectious Disease*, 20, 533–534. [https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1)
- Extebarria, N. O., Santamaria, M. D., Picaza-Gorrochategui, M., & Idoiaga-Mondragon, N. (2020). Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the Northern Spain. *Reports in Public Health*, 36, e00054020.
- Fitzpatrick, K. M. (2016). How positive is their future? Assessing the role of optimism and social support in understanding mental health symptomatology among homeless adults. *Stress and Health*, 33, 92–102.
- Fitzpatrick, K. M., & LaGory, M. (2011). *Unhealthy cities: Poverty, race, and place in America*. New York, NY: Routledge. <https://doi.org/10.4324/9780203843765>
- Fitzpatrick, K. M., Piko, B. F., & Wright, D. (2005). A tale of two cities: Health-compromising behavior among Hungarian and African-American youth. *Sociological Studies of Children and Youth Annual*, 10, 189–212.
- Fitzpatrick, K. M., & Spialek, M. (2020). *Hurricane Harvey's aftermath: Place, race and inequality in disaster recovery*. New York, NY: New York University Press.
- Fitzpatrick, K. M., & Willis, D. (2018). Risks, resources, and depressive symptomatology among Marshallese adolescents. *American Journal of Orthopsychiatry*, 88, 189–198.
- Galea, S., Merchant, R. M., & Lurie, N. (2020). The mental health consequences of COVID-19 and physical distancing: The need for prevention and early intervention. *Journal of the American Medical Association Internal Medicine*, 180, 817–818.
- Gallacher, J., Bronstering, K., Palmer, S., Fone, D., & Lyons, R. (2007). Symptomatology attributable to psychological exposure to a chemical incident: A natural experiment. *Journal of Community Epidemiological Community Health*, 61, 506–512.
- de Girolamo, G., Cerveri, G., Clerici, M., Monzani, E., Spinogatti, F., Starace, F., ... Vita, A. (2020). Mental health in the coronavirus disease 2019 emergency—The Italian response. *JAMA Psychiatry*. Advance online publication. <https://doi.org/10.1001/jamapsychiatry.2020.1276>
- Holmes, E. A., O'connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... Bullmore, E. (2020). Multidisciplinary research priorities for the Covid-19 pandemic: A call for action for mental

- health services. *Lancet Psychiatry*, 7, 547–560. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)
- Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 epidemic in China: A web based cross-sectional survey. *Psychiatry Research*, 288, 112954. <https://doi.org/10.1101/2020.02.19.20025395>
- Irwin, J., LaGory, M., Ritchey, F., & Fitzpatrick, K. M. (2008). Social assets and mental distress among the homeless: Exploring the roles of social support and other forms of social capital on depression. *Social Science and Medicine*, 67, 1935–1943.
- Kaiser Family Foundation. (2020). The implications of COVID-19 for mental health and substance abuse. Retrieved from <https://kff.org/issue-brief/>
- Kogan, J. N., & Edelstein, B. A. (2004). Modification and psychometric examination of a self-report measure of fear in older adults. *Journal of Anxiety Disorders*, 18, 397–409.
- Lin, N., Dean, A., & Ensel, W. (1986). *Life events, social support and depression*. Orlando, FL: Academic Press. <https://doi.org/10.1016/C2013-0-11093-8>
- Liu, X., Kakade, M., Fuller, C. J., Fan, B., Fang, Y., Kong, J., ... Wu, P. (2012). Depression after exposure to stressful events: Lessons learned from the severe acute respiratory syndrome epidemic. *Comprehensive Psychiatry*, 53, 15–23.
- Martin, M. S., Maddocks, E., Chen, Y., Gilman, S. E., & Colman, I. (2016). Food insecurity and mental illness: Disproportionate impacts in the context of perceived stress and social isolation. *Public Health*, 132, 86–91.
- Mazza, C., Ricci, E., Biondi, S., Colasanti, M., Ferracuti, S., Napoli, C., & Roma, P. (2020). A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: Immediate psychological responses and associated factors. *International Journal of Environmental Research and Public Health*, 17, 3165. <https://doi.org/10.3390/ijerph17093165>
- McLeod, G. F. H., Horwood, L. J., & Fergusson, D. M. (2016). Adolescent depression, adult mental health and psychosocial outcomes at 30 and 35 years. *Psychological Medicine*, 46, 1401–1412.
- Missine, S., Vandeviver, C., Van de Velde, S., & Bracke, P. (2014). Measurement equivalence of the CES-D 8 depression scale among the ageing population in eleven countries. *Social Science Research*, 46, 38–47.
- Nagata, J. M., Palar, K., Gooding, H. C., Garber, A. K., Whittle, H. J., Bibbins-Domingo, K., & Weiser, S. D. (2019). Food insecurity is associated with poorer mental health and sleep outcomes in young adults. *Journal of Adolescent Health*, 65, 805–811.
- Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, 22, 337–356.
- Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 19, 2–21.
- Pollara Strategic Insights. (2020). Mental health during COVID-19 outbreak, wave 1. Toronto, ON, Canada: Mental Health Research Canada. Retrieved from https://www.pollara.com/wp-content/uploads/2020/04/Pollara-COVID_Wave1-ReportF.pdf
- Qui, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry*, 33, e100213.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry*, 52, e102066.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 45, 219–247.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology*, 67, 1063–1078.
- Sønderskov, K., Dinesen, P., Santini, Z., & Østergaard, S. (2020). The depressive state of Denmark during the COVID-19 pandemic. *Acta Neuropsychiatrica*, 32, 226–228. <https://doi.org/10.1017/neu.2020.15>
- Stankovaska, G., Memedi, I., & Dimitrovski, D. (2020). Coronavirus COVID-19 disease, mental health and psychosocial support. *Society Register*, 4, 33–48.
- Thoits, P. A. (2006). Personal agency in the stress process. *Journal of Health and Social Behavior*, 47, 309–323.
- Thoits, P. A. (2010). Stress and health: Major findings and policy implications. *Journal of Health and Social Behavior*, 51, S41–S53.
- Tracy, M., Norris, F. H., & Galea, S. (2011). Differences in the determinants of posttraumatic stress disorder and depression after a mass traumatic event. *Depression and Anxiety*, 28, 666–675.
- Tzeng, H.-M., & Yin, C.-Y. (2008). A crisis: Fear toward a possibley-Ming PhD, RN. *Journal of Nursing Care Quality*, 23, 177–183.
- Vilagut, G., Forero, C. G., Barbaglia, G., & Alonso, J. (2016). Screening for depression in the general population with the Center for Epidemiologic Studies Depression (CES-D): A systematic review with meta-analysis. *PLoS One*, 11, e0155431.
- Wang, Y., Di, Y., Ye, J., & Wei, W. (2020). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, Health and Medicine*. <https://doi.org/10.1080/13548506.2020.1746817>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Environmental Research and Public Health*, 17, 1729.
- Wang, Y., Shen, H., & Hurwicz, M. (2017). Measuring depressive symptoms with 8-item and 9-item CES-D: Does race/ethnicity matter? *Innovation in Aging*, 1, 1140–1149.
- Willis, D., & Fitzpatrick, K. M. (2019). Adolescent food insecurity: The special case of Marshallese youth in Northwest Arkansas, USA. *Public Health Nutrition*, 23, 544–553. <https://doi.org/10.1017/S1368980019002647>
- World Health Organization. 2020. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- Zhang, J., Lu, H., Zhang, H., Du, S., Jiang, Q., Du, T., & Zeng, B. (2020). The differential psychological distress of populations affected by the COVID-19 pandemic. *Brain, Behavior, and Immunity*, 87, 49–50. <https://doi.org/10.1016/j.bbi.2020.04.031>

How to cite this article: Fitzpatrick KM, Harris C, Drawwe G. Living in the midst of fear: Depressive symptomatology among US adults during the COVID-19 pandemic. *Depression and Anxiety*. 2020;1–8. <https://doi.org/10.1002/da.23080>