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# Stressful life events and depressive symptoms during COVID-19: A gender comparison

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#### Abstract

The COVID-19 pandemic precipitated a wide range of public health, economic, social, and political shocks, setting in motion life events that reverberated to affect individuals' mental health. Moving beyond a checklist approach, this study drew on individuals' own words to identify both conventional and novel sources of stress during COVID-19 and examine the role of stressful life events in producing gender disparities in depressive symptoms. Drawing on a 2021 U.S. nationally representative survey, we coded text responses to an open-ended question on stressful life events and conducted descriptive and regression analyses (n = 1733). The analyses revealed three key findings. First, men were more likely to report having experienced no stressful life events or else mention politics as a source of stress. Women, by comparison, were more likely to report the following as stressful-inability to socialize, paid work, care work, health, or the death of loved ones. Second, for both women and men, respondents reporting no stressful life events had the lowest, and those reporting finances as the most stressful life event had the highest, depressive symptoms. Third, women had higher depressive symptoms than men, and mediation analysis showed that stressful life events explained approximately a third of the gender gap

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in depressive symptoms. The findings indicate that policies attending to people's financial stress are important for mitigating mental health risks in turbulent times. Interventions that reduce women's exposure to stressful life events are also crucial to bridging gender disparities in mental health.

#### KEYWORDS

COVID-19, depressive symptoms, gender, mental health, stressful life events, United States

# 1 | INTRODUCTION

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The COVID-19 pandemic precipitated a wide range of public health, economic, social, and political shocks, setting in motion stressors that reverberated to affect individual lives and mental health (Kessel et al., 2021; Moen, 2022). Drawing on nationally representative U.S. data collected in 2021, we contribute to the scholarship on mental health, gender, and social change by examining gender differences in perceived stressful life events (SLE) and the role of SLE in producing gender disparities in depressive symptoms in times of COVID-19.

Existing research predominantly relied on pre-determined checklists to capture SLE (see S. Cohen et al., 2019; Paykel, 2001; Wheaton, 1994 for reviews; Wong et al., 2022 for a pandemic study), even as little agreement exists about the "necessary criteria ... for an event to be classified as stressful" (S. Cohen et al., 2019, p. 579). To complicate matters further, the COVID-19 pandemic was unprecedented in its scope and impacts, rendering conventional life-event inventories (e.g., Dohrenwend, 2006; Holmes & Rahe, 1967) less effective in capturing novel sources of stress during this time.

Advancing prior checklist-based research, we drew on respondents' own words to understand their experiences during COVID-19, an invaluable approach to discerning "how individuals perceive and evaluate the events in their own life" (Stanhope et al., 2021, p. 2). Adopting a gendered lens, we expected women to be more likely than men to report at least one type of SLE, given women's disadvantaged social positions and the ample evidence of COVID-19 in exacerbating gender inequalities (Fan & Moen, 2022; Hudde et al., 2023; Ridgeway, 2011; Yavorsky et al., 2021). In addition, we expected women and men to consider different types of events to be stressful, given the gendered division of paid and unpaid labour and women's greater sensitivity to the well-being of their significant others (Helgeson, 2011; Kessler et al., 1985; Taylor, 2015). Our first research question therefore asks: What life events did American women and men consider most stressful during the pandemic?

Our second research question concerns the implications of SLE for depressive symptoms. Building on and extending the life event literature, we compared different types of SLE to determine if some events were more detrimental to mental health than others during COVID-19 when challenges, hardships, and stressors proliferated in people's lives. Findings will facilitate policy-making by elucidating how mental health resources can be effectively allocated to assist individuals most in need.

Insofar as gender differences existed in the occurrence or the type of SLE during the pandemic, our third research question addresses whether and to what degree SLE accounted for the gender gap in depressive symptoms. It is well-established that women have higher risk of psychological distress than men (Kessler, 2000; Rieker et al., 2010). Extending this literature to the time of a social crisis, we assessed the role of differential exposure to SLE in shaping gender disparities in depressive symptoms during COVID-19. Findings will advance understanding of gendered mental health burdens in the pandemic and inform interventions needed for a gender-equitable post-pandemic recovery.

# 2 | METHODS

# 2.1 | Data

Our analytic sample consisted of 1733 U.S. adults (872 men and 861 women). The data came from a nationally representative U.S. survey, conducted online in May–June of 2021 through Ipsos KnowledgePanel (see also Fan & Qian, 2023). KnowledgePanel is a probability-based online panel in the United States, which used both random-digit-dialing and address-based sampling methodologies to sample and recruit its members and if needed, panelists are provided with free access to the Internet and digital devices for survey participation.<sup>1</sup> The survey consisted of 1828 respondents, and we obtained our analytic sample after removing 95 observations with missing data on the variables used in our analysis. Respondents in our analytic sample were 49 years of age on average; 34% were college graduates, 64% were Whites, and 62% were married or cohabiting when surveyed (Appendix Table A1).

# 2.2 | Measures

Depressive symptoms were measured through the Center for Epidemiologic Studies Depression (CES-D) scale. Respondents were asked, during the past week, how often they were bothered by things that usually don't bother them, felt depressed, felt hopeful about the future, were happy, felt lonely, and could not get going. Each item was rated on a four-point scale from zero ("rarely or none of the time") to three ("most or all of the time"). We reverse-coded the two positive mood items and summed the six items (alpha = 0.81). The average score was 5.26 for women and 4.72 for men ( $p_{gender gap}$ <.05, Appendix Table A1). The histograms in Appendix Figure A1 show the distribution of depressive symptoms by gender.

Gender was a dichotomous measure distinguishing men from women. The binary option was provided by the survey firm as a standard profile variable.

Stressful life events were manually coded from responses to an open-ended question: "Please list the most stressful life event that has occurred to you since **March 1**, 2020 when COVID-19 began spreading in the United States" (bolded in the original). Text responses were coded in two steps. First, based on the Pew Research Center's codebook on different types of negative changes experienced by Americans during COVID-19 (Kessel et al., 2021),<sup>2</sup> a research assistant coded text responses from our survey into relevant broad categories (e.g., relationships, work situation), including a residual category for unclassifiable responses. Second, for each category compiled by the research assistant, the two authors of the article independently coded every response. We compared our codes, discussed and resolved disagreements, refined Pew Research Center's codebook, and created new analytic codes when necessary to better represent our data (see Appendix Section A for details).

Our regression analyses included socio-demographic controls that have been shown in previous research to affect both mental distress and stressful life events (Aneshensel et al., 2013; S. Cohen et al., 2019; Wheaton, 1994), including age, education (less than high school, high school, some college, bachelor's degree or above), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, other), marital status (married/cohabiting, previously married, never married), and census region (Northeast, Midwest, South, West).

# 2.3 | Analytic strategies

First, to examine gender differences in SLE, we calculated the share of women and men reporting each type of SLE. Second, to investigate the association between SLE and depressive symptoms, we used ordinary least squares (OLS) regression models. As will be discussed below, we identified 15 types of SLE, in addition to a "none" category. Given that some respondents reported more than one SLE, we fit 15 models to estimate the mental health implications of

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each event. The focal predictor was a three-category variable: (1) no SLE (reference group), (2) reporting a given SLE (e.g., finances), and (3) reporting other types of SLE (e.g., any non-finances events). In addition to the control variables described above, all models adjusted for gender and a dummy indicator of reporting multiple SLE. Third, to examine the role of SLE in explaining the gender gap in depressive symptoms, we conducted mediation analysis, assessing whether adding the 15 dichotomous variables denoting each type of SLE would significantly reduce the coefficient for gender in predicting depressive symptoms. Specifically, we fit two models—one without and one with the SLE indicators. Using a recently developed framework for comparing coefficients across models (Mize et al., 2019), we then combined covariance matrices of the two models, and computed the cross-model covariances to test the equality of the gender coefficient between the two models. Analyses were conducted in Stata 18.0 and weighted to represent the U.S. adult population.

# 3 | RESULTS

# 3.1 | Descriptive results

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Our coding identified 15 distinct types of life events that Americans considered most stressful during COVID-19, along with a category indicating no SLE. Note that 158 respondents mentioned more than one SLE and were coded as such. Table 1 presents the percentage reporting each type of SLE and provides three example responses for each (original quotes are used). Approximately 12% of the respondents reported that they experienced no stressful life events since March 2020, comparable to the result from a Pew Research Center's survey showing that 11% of Americans reported no negative changes in their lives during COVID-19 (Kessel et al., 2021). Of those who reported SLE, health-related events were the most common (14%), followed by paid work (9%), the death of family members or friends (8%), and politics (8%).

Figure 1 presents the gender-specific distribution of SLE, with 95% confidence intervals specified. Men were more likely than women to report no SLE (14.68% vs. 8.72%, p < .01); men were also more likely to mention politics as a source of stress (11.25% vs. 5.13%, p < .001). Conversely, it was more common for women to report the following as stressful (p < .05 for all)—inability to socialize or visit people (7.82% vs. 4.99%), paid work (11.11% vs. 6.37%), care work (4.36% vs. 2.37%), own or other people's health events (16.26% vs. 12.44%), and the death of family members or friends (9.76% vs. 6.48%). For the other SLE identified in our data—activities, job loss, society, residential, emotional state, staying home, relationships, finances, and miscellaneous—men and women did not differ from each other in the likelihood of reporting any of these as most stressful.

## 3.2 | Regression results

Figure 2 presents the coefficients and 95% confidence intervals denoting the mental health implications of each type of SLE (full results shown in Appendix Table A2). Relative to reporting no SLE since the COVID-19 onset, reporting any of the 15 SLE predicted significantly higher depressive symptoms (ranging from 1.17 to 4.07 points higher, all p < .05). In particular, respondents reporting finances-related SLE had the highest depressive symptoms (b = 4.07, p < .001), indicating that economic vulnerability was a salient source of mental health problems.

Lastly, we turn to mediation analysis (Appendix Table A3). When the regression model did not adjust for SLE, women scored 0.560 points higher on depressive symptoms than men (p < .05). This gender difference in depressive symptoms was equal to 0.140 standard deviations, representing a small effect size according to Cohen's d criteria (J. Cohen, 1988). Adding the SLE measures reduced the gender gap to 0.358 (p > .05). A cross-model test of the gender coefficient (Mize et al., 2019) indicated that the reduction in the gender gap in depressive symptoms was statistically significant (p < .01). Thus, the differential distribution of SLE between women and men explained 36% (=[0.560-0.358]/0.560) of the gender gap in depressive symptoms during the COVID-19 pandemic.

# TABLE 1 Types of stressful life events.

Stressful life events	Percentage <sup>a</sup>	Example survey responses
None	11.57%	<ul> <li>"No stressful event"</li> <li>"I do not recall any such event"</li> <li>"Nothing. it was a good and warm year. Loved being home"</li> </ul>
Health	14.44%	<ul> <li>"Fighting cancer"</li> <li>"My husband tested positive for covid-19"</li> <li>"Spent week in hospital with pneumonia"</li> </ul>
Paid work	8.84%	<ul> <li>"Husband works in an ER with high covid case rates"</li> <li>"Trying to balance working from home and feeling on call most of the time"</li> <li>"Navigating working as a teacher and the pandemic"</li> </ul>
Death	8.19%	<ul> <li>"Losing my mother in law in May 2020"</li> <li>"Lost a brother to cancer. Unrelated to covid"</li> <li>"Losing three sisters to covid"</li> </ul>
Emotional state <sup>b</sup>	8.16%	<ul> <li>"Always concerned about catching virus"</li> <li>"Worrying that me or a family member would get covid"</li> <li>"The worry of someone I love getting the virus"</li> </ul>
Politics	8.06%	<ul> <li>"Jan 6, 2021 capital resurrection and Trump as a mad man"</li> <li>"Biden and the Dems taking control by force"</li> <li>"Govt shutting everything down for political reasons. Govt destroyed the economy and became dictators. The destruction of this country is the most stressful thing I've experienced the past year"</li> </ul>
Activities	7.62%	<ul> <li>"Not being able to go to a restaurant or a pizza place and sit down and have nice cold beer"</li> <li>"Having my school's senior trip cancelled"</li> <li>"Postponed my wedding"</li> </ul>
No social life	6.47%	<ul> <li>"We self-isolated, so we still have not visited family members who live more than 100 miles away"</li> <li>"Not seeing my family"</li> <li>"Not hugging and seeing my family and Grandkids"</li> </ul>
Job loss	6.31%	<ul> <li>"Laid off from work in June 2020"</li> <li>"Wife lost her job for 9 months"</li> <li>"Husband got laid off"</li> </ul>
Relationships	5.79%	<ul> <li>"Dealing with a new divorce and child custody sharing"</li> <li>"Domestic conflict with wife"</li> <li>"Having my youngest son threatened with legal action by his former partner"</li> </ul>
Society	5.37%	<ul> <li>"Increasing amount of deaths from Covid-19 in the US"</li> <li>"Watching a lot of higher education people be laid off"</li> <li>"Nothing stressful to me personally, but it has been stressful to watch unprotected seniors die in nursing homes and assisted living facilities. It has been stressful to watch people lose their businesses"</li> </ul>
Finances	5.20%	<ul> <li>"Major increase in expenses rent but not a corresponding increase in pay"</li> <li>"My volatile net worth, which makes planning for the future difficult"</li> <li>"Now in credit card debt"</li> </ul>
Staying home	4.45%	<ul> <li>"Having to stay home all the time"</li> <li>"Being locked down with nowhere to go"</li> <li>"Stay at home felt locked up"</li> </ul>

(Continues)

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# TABLE 1 (Continued)

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Stressful life events	Percentage <sup>a</sup>	Example survey responses
Residential	3.75%	<ul> <li>"Being evacuated due to California fires for 45 days"</li> <li>"Kitchen remodel"</li> <li>"Move into new home when COVID started"</li> </ul>
Care work	3.41%	<ul> <li>"Parenting my anxious child through the pandemic"</li> <li>"When I had to start taking care of 2 school age children when the whole world shut down"</li> <li>"Being the primary care provider for my elderly parents"</li> </ul>
Other	4.71%	<ul> <li>"I was hit by a pickup while riding my bicycle"</li> <li>"I had a baby during the pandemic"</li> <li>"I was arrested for a DUI in May 2020. This was probably not related much to the pandemic, but it may have increased stress that led to problematic behavior"</li> </ul>

<sup>a</sup>The percentages reporting each type of stressful life events add up to greater than 1 because some respondents mentioned multiple stressful life events.

<sup>b</sup>Although the survey question asked about a "life event" that had occurred, feelings of worry, fear, and uncertainty were nevertheless reported as stressful during COVID-19 by some respondents. This category of emotional state may not be viewed as "stressful life events" according to conventional definitions; we nevertheless include it here to truthfully reflect respondents' views. The main results reported in the article—associations between stressful life events and depressive symptoms, and the role of stressful life events in explaining the gender gap in depressive symptoms—were robust to excluding this category from our analysis.



**FIGURE 1** Percentage reporting each type of stressful life events, by gender. The gender-specific percentages add up to greater than 1 because some respondents mentioned multiple stressful life events. Error bars denote 95% confidence intervals. Asterisks indicate the significance level of gender differences in reporting each type of stressful life events (\*\*\*p < .001, \*\*p < .01, and \*p < .05).



**FIGURE 2** Coefficients for stressful life events in OLS regression models predicting depressive symptoms. All OLS regression models control for gender, age, education, race, marital status, census region, and a dummy variable indicating multiple stressful life events (full regression results are available online in Appendix Table A2). Error bars denote 95% confidence intervals.

# 4 | CONCLUSION

A growing body of literature has examined the mental health burden of the COVID-19 pandemic and the underlying mechanisms. Recent research, for example, has identified a wide range of psychosocial factors contributing to the uneven mental health vulnerability across social groups and socio-cultural contexts: existential threat (Vacchiano et al., 2023), future anxiety and resilience (Paredes et al., 2021), sense of control (Qian & Fan, 2023), distress toler-ance or social support (Liu et al., 2020), and more. Building on and extending this line of research, this study points to the importance of life events in understanding the landscape of stress during a social crisis. By doing so, it makes three contributions to the literature on mental health, gender, and social disparities.

Moving beyond checklist-based research on SLE, we first bring individuals' lived experiences to the fore, thereby promoting a better understanding of what stress means for those who have lived through the pandemic. This was achieved through using an open-ended question so that respondents described, in their own words, what they considered stressful. Given the COVID-19 public health crisis, health events that occurred to respondents or their loved ones emerged as the most-mentioned SLE (14%). Paid work (9%) and a death of someone close to the respondents (8%) were also frequently described as stressful, indicating the economic and social ramifications of the pandemic that added challenges to individual lives (Corpuz, 2021; Fan & Qian, 2023). Another often-mentioned source of stress was political events (8%), such as the 2020 U.S. Presidential Election, the U.S. Capitol Riot, and the murder of George Floyd. The identification of politics as SLE is noteworthy because prior checklist measures often focus on events that happened to individuals and their immediate social circles, ignoring that societal events can also impose stress.

Second, we contribute by showing that not all stressful life events were equally harmful to mental health. Finances-related events turned out to be the most distress-inducing, for men and women alike.<sup>3</sup> This finding indicates

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that policies addressing Americans' financial stress, such as welfare provisions for needy families, are crucial for mitigating mental health risks during times of social crises.

Our third contribution is to show marked gender differences in perceived SLE and to demonstrate that SLE played a key role in explaining women's greater depressive symptoms compared to men's. Men were more likely than women to report no SLE during the pandemic. Among those who reported at least one SLE, men were more likely to regard politics as the most stressful, whereas women were more likely to list inability to socialize, paid work, care work, their own or their close others' health events, or a death of someone close to them as stressful. Before discussing these findings, we note one caveat: our study captured gender differences in reported stressful life events. In view of the still entrenched norms of masculinity that emphasize toughness (Courtenay, 2000), men may be less willing to disclose experiences of stress, so we may have underestimated the extent of stressful life events that men experienced during the pandemic. In terms of the observed differences in types of SLE between women and men, they may reflect gendered expectations and experiences, that is, women are socially expected to and typically do bear a greater burden of managing work-family responsibilities and caring for others in their social networks (Hudde et al., 2023; Kessler et al., 1985; Taylor, 2015; Yavorsky et al., 2021). Therefore, women were more likely than men to perceive paid or care work, or events that happened to people in their social circles, as stressful during COVID-19. As our mediation analysis revealed, gendered exposure to SLE accounted for approximately a third of the gender gap in depressive symptoms. Thus, to bridge gender disparities in mental health, it is imperative to implement policies that reduce women's exposure to stressful life events, particularly events that women report being more exposed to, such as those related to socializing, paid work, care work, health, or close others' deaths.

Our research has limitations. The cross-sectional data precluded us from establishing causality between SLE and depressive symptoms. Additionally, our sample size did not allow for comparisons based on race, social class, generational cohorts, or the intersections of these and other important structural locational markers.

Taken together, this study highlights promising avenues for future research. Future studies will benefit from leveraging open-ended questions to capture the human meanings of stress and to identify both conventional and novel sources of stress in turbulent and uncertain times. While we adopted manual coding, advances in computational text analysis have opened up opportunities to efficiently code massive text data (Grimmer et al., 2022). Given the ever-changing nature of stress (Moen, 2022; Pearlin & Bierman, 2013), we call for more studies to investigate what stressful life events mean to individuals occupying different social locations and how the causes, patterns, and consequences of these events are shaped by social and cultural contexts.

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# CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest to report.

DATA AVAILABILITY STATEMENT

Research data are not shared.

# ENDNOTES

- <sup>1</sup> KnowledgePanel's methodological overview: https://www.ipsos.com/sites/default/files/ipsosknowledgepanelmethodology.pdf.
- <sup>2</sup> Pew Research Center's codebook: https://www.pewresearch.org/2021/03/05/methodology/.
- <sup>3</sup> Supplementary analysis indicated that women and men did not significantly differ from each other in how finances-related stressful life events predicted depressive symptoms.

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# SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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