



COVID-Related Stressors and Psychological Distress Among Chicago Residents: the Moderating Role of Race

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Abstract

Background Racial and ethnic minorities have been disproportionately affected by the COVID-19 pandemic and have experienced greater financial loss, housing instability, and food insecurity due to COVID-related restrictions. As a result, Black and Hispanic communities may be at greater risk of experiencing psychological distress (PD).

Methods Using data collected between October 2020 and January 2021 from 906 Black (39%), White (50%), and Hispanic (11%) adults, we assessed racial/ethnic differences in the effect of three COVID-related stressors—employment stress, housing instability, and food insecurity—on PD using ordinary least square regression.

Results Black adults reported lower PD levels compared to White adults ($\beta = -0.23$, $P < 0.001$), but Hispanic adults did not differ significantly from White adults. COVID-related housing instability ($\beta = 0.46$, $P < 0.001$), food insecurity ($\beta = 0.27$, $P < 0.001$), and employment stress ($\beta = 0.29$, $P < 0.001$) were associated with higher PD. Employment stress was the only stressor to differentially affect PD by race/ethnicity. Among those that reported employment stress, Black adults had lower levels of distress compared to Whites ($\beta = -0.54$, $P < 0.001$) and Hispanics ($\beta = -0.04$, $P = 0.85$).

Conclusion Despite relatively high exposure to COVID-related stressors, Black respondents had lower levels of PD compared to Whites and Hispanics which may reflect differences in race-specific coping mechanisms. Future research is needed to elucidate the nuances of these relationships and identify policies and interventions that prevent and minimize the impact of employment, food, and housing-related stressors and support coping mechanisms that promote mental health among minority populations, such as policies that support easier access to mental health and financial and housing assistance.

Keywords COVID-19-related stressors · Psychological distress · Race · Chicago · Health disparities · Differential vulnerability

Background

Since the first known case of the novel coronavirus (i.e., COVID-19) was reported in the USA on January 17, 2020, there have been over 80 million cases and over a million deaths [1]. The pandemic has created unprecedented challenges and distress for people around the world. Marginalized communities, in particular, have been disproportionately impacted by the pandemic, with Black and Hispanic individuals experiencing higher rates of infection, hospitalization, and death compared to their White counterparts

[2–5]. In addition to its toll on physical health, the COVID-19 pandemic has significantly disrupted everyday life due to stay-at-home orders that have led to increases in social isolation; the loss or decrease in employment income; more limited access to healthcare; increased feelings of fear, distress, and depression [6, 7]; and increased rates of suicide [8]. Fear and uncertainty about COVID-19 and about what the future holds have led to sharp increase in mental health challenges both in people with and without pre-existing mental health conditions [9, 10].

Communities of color that historically and contemporaneously are the target of structural, systematic, and interpersonal racism and discrimination have disproportionately experienced unemployment and more severe economic challenges as a result of the pandemic [2–4] which may place them at greater risk for poor mental health. However, prior research on race differences in depressive symptomology,

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psychological distress, and other more subjective indicators of mental well-being has been mixed, with some finding lower symptomology among Black individuals [11–14] and others finding no difference [13, 15]. Current data also shows that Black people have experienced one of the most significant increases in mental illness post pandemic compared to others [16]. Given the disproportionate burden of the pandemic on the health of people of color, a reevaluation of race differences in the mental health consequences of the pandemic and of the effects of COVID-related social stressors on mental health is needed to better understand the types and severity of the stressors they face and the mental health consequences of these exposures. Accordingly, the current study examines the prevalence of psychological distress among urban-dwelling White, Black, and Hispanic adults during the early stages of the pandemic and race differences in the effect of COVID-related social stressors on psychological distress.

The Effects of Social Stressors on Mental Health

A long line of research has shown the adverse effects of stress on mental health, including increases in psychological distress [17, 18]. Psychological distress is a reactionary state of being elicited by high levels of stress or harm [19]. It has a negative effect on social and physical well-being, including an increased likelihood of having chronic obstructive pulmonary disease, heart disease, and diabetes [20–22]. Moreover, in the general population, psychological distress is associated with greater all-cause mortality [23], death from cancer [24], infectious diseases [25], and heart failure [26]. Thus, identifying and addressing risk factors for psychological distress is important for population health generally but may be even more important during times of collective trauma and stress, such as an enduring pandemic.

Multiple social and economic factors have been shown to increase feelings of distress. Unemployment and underemployment have been shown to be significant sources of stress [27–30] that contribute to feelings of distress [31–33]. During the COVID-19 pandemic, a large number of Americans experienced a loss or reduction in their employment leading to greater stress. For instance, a record 21 million people lost their jobs by the second quarter of 2020, coinciding with the onset of the COVID-19 pandemic. Although there have been some improvements since then, there were still approximately 6.8 million unemployed people by the end of 2021, which is twice as high as unemployment rates before the pandemic [34]. Individuals who lost their job during the pandemic reported experiencing greater symptoms of depression, anxiety, and stress [35]. For instance, Yao and Wu [36] found that people who were involuntarily

unemployed during the pandemic were more likely to have mental disorders compared to employed or voluntarily unemployed individuals. Moreover, individuals who lost their jobs due to COVID-related reasons were more likely to experience distress; and were at greater risk of having a mental disorder if they experienced a potentially long-term unemployment, due to company closure, for example.

The stress of being under- or unemployed when one desires to be employed may be particularly detrimental to mental health because of the cyclical relationship between employment and mental health. Namely, employment stressors (i.e., underemployment or unemployment but seeking employment) are associated with poor mental health, and subsequently poor mental health is associated with a lower likelihood of future employment [37], which continues or heightens the experience of employment-related stress. Furthermore, the loss of or reductions in employment may increase exposure to financial challenges and other related stressors (e.g., food insecurity and housing instability). Financial challenges resulting from job loss have been shown to increase psychological distress and may be more pronounced among low-income and lower-educated populations [38]. Moreover, having limited financial resources due to under- and unemployment may create a situation where people have to choose between buying food or paying for housing, an experience that was clearly evident during and before the COVID-19 pandemic [39]. For instance, Black individuals had consistently higher rates of unemployment and lower incomes before the pandemic, which put them at an increased risk of experiencing COVID-related economic hardships [40, 41] and may similarly affect food security and housing stability.

Food insecurity, which is the lack of consistent access to enough food for every person in a household [42], has increased in the USA and adversely affects physical and mental health. In 2020 and 2021, there were 45 million and 42 million food insecure individuals, respectively, compared to 35 million in 2019 [43]. The majority of food insecure individuals are people of color. Prior to the pandemic, Black households experienced food insecurity at least twice the rate of non-Hispanic White households [44–46], which then put them at greater risk of food insecurity during the pandemic [47]. Prior research has shown that food insecurity is associated with psychological distress [48–50] and other mental health outcomes, including depression [51, 52]. During the early months of the pandemic, Fang et al. [53] found that low-income individuals experiencing food insecurity were 3.6 and 3.5 times more likely to report symptoms of anxiety and depression, respectively, compared to those who were food secure. Food insecurity not only increases symptoms of psychological distress, but it also diminishes protective psychosocial resources, such as perceived social support and mastery [54], which

places food-insecure individuals at even greater risk of poor mental health. Similar to job loss and other employment-related stressors, food insecurity is highly correlated with other related social stressors, including housing instability. According to a report by Feeding America, an organization dedicated to feeding America's hungry through a nationwide network of member food banks, nearly 40% of the population they serve report choosing between paying for housing and paying for food [55]. Additionally, the National Alliance to End Homelessness reports that food insecurity often precedes homelessness as people often choose paying for housing over paying for food [56].

Housing instability encompasses a number of challenges including, homelessness, having difficulty paying rent, spending more than 50% of one's household income on housing, moving frequently, living in overcrowded conditions, and staying with family and friends [57, 58]. Early examinations of housing instability during the pandemic suggest that 11 million people were significantly overdue on their rent or mortgages by the end of 2020 [59] and an estimated 30 million people were at risk of eviction [60]. Housing instability is a significant source of stress that is associated with poor mental health [61]. In particular, exposure to chronic housing instability early in the life course has been shown to affect mental health later in life [62, 63]. However, even acute experiences of housing instability due to national disasters can have a negative effect on mental health. For instance, Fussell and Lowe [64] found that sudden housing loss due to Hurricane Katrina was associated with greater psychological distress especially for individuals who were relocated or continued to have unstable housing after the hurricane; these individuals had higher distress levels compared to individuals who eventually returned home. Thus, housing instability, in the long and short term, can have significant adverse effects on mental health.

The Influence of Race on the Relationship Between Social Stressors and Mental Health

Despite similar levels of exposure, social stressors may have a greater psychological impact on individuals with lower social standing compared to higher ones due to more limited access to protective social and personal resources that are designed to help them overcome these stressors [65–72]. Accordingly, Black and Hispanic individuals may be more adversely affected by the social stressors brought on or exacerbated by the pandemic, due to their generally higher exposure to acute and chronic stressors, their lower socioeconomic status, and the disproportionate social and economic adversity they experience in the USA compared to their White counterparts [73–75]. Prior research examining race differences in the effect of employment stress on

mental health has shown that short-term unemployment has a significantly greater impact on psychological distress for Black compared to White people [76]. Similarly, researchers have found that experiences of food insecurity and housing instability are more strongly associated with mental health challenges for Black and Hispanic people [77, 78]. Taken together, the literature suggests that Black and Hispanic people may be more vulnerable to the negative mental health effects of social stressors. In the current study, we set out to examine whether these general findings about race differences in the effects of stress on psychological distress hold for COVID-related social stressors.

The Current Study

Stressors are rarely independent of one another. They often co-occur and/or occur sequentially such that the occurrence of one stressor can trigger the onset of another [79–81]. Given this relationship between social stressors, examining the effect of one stressor on psychological distress likely underestimates the total effect of similar stressors on psychological distress [80, 82, 83]. To more fully understand the effects of social stressors on psychological distress, multiple related stressors should be examined. Accordingly, the current study evaluates racial and ethnic differences in psychological distress experienced during the COVID-19 pandemic among urban dwelling adults and in the effects of three COVID-related stressors—employment stress, food insecurity, and housing instability. We collectively examine the effects of these three stressors because their relationship with psychological distress may be bi-directional such that individuals experiencing challenges securing stable employment, food options, and housing are more likely to have higher psychological distress compared to those who are not [37, 84, 85]; and individuals experiencing psychological distress and other symptoms of mental illness are less likely to have stable employment, food options and housing [37, 84, 85]. Additionally, these stressors are interrelated such that stress related to the loss or reduction of employment may lead to food insecurity and housing instability [86] and food insecurity is often a precursor to housing instability [56, 87]. Thus, examining these stressors collectively will provide a better representation of the universe of COVID-related social stressors and their effects on psychological distress.

We also focus on racial and ethnic differences in their effects on psychological distress given racial/ethnic differences in coping with stressors and disparities in access to protective resources. While COVID-19 has negatively affected the lives of most people around the world, it has also laid bare existing racial/ethnic disparities in income, healthcare access, social and political resources, and other

protective factors, creating an all too familiar backdrop for the disproportionate loss and stress experienced by people of color during the pandemic. Thus, in the current study, we set out to determine: (1) the distribution of COVID-related stressors by race, (2) the distribution of psychological distress by race, and (3) race differences in the effect of COVID-related stressors on psychological distress. Addressing these aims will allow us identify the COVID-related stressors that are most prevalent in communities of color and most detrimental to the psychological well-being of communities of color. In line with prior research on disparities in psychological distress [12, 88–92], we hypothesize that Black adults will have lower levels of psychological distress compared to White adults, despite reporting greater exposure to employment-related stress, food insecurity, and housing instability. We also hypothesize that each stressor will be positively associated with psychological distress but the relationships will be more pronounced among Black and Hispanic adults.

Finally, our study intentionally focuses on the city of Chicago, a city that continues to be highly segregated, racially and economically [93]. As such, COVID-19 hotspots in Chicago were concentrated in predominantly Black and Hispanic neighborhoods that are generally low income with high rates of unemployment. Furthermore, the majority of hospitalizations and deaths from COVID-19 were made up of Black and Hispanic individuals [94] which illuminate the racial disparities that characterized the COVID-19 pandemic. For these reasons, Chicago provides a unique context for examining the disproportionate ways in which that COVID-related stressors have impacted communities of color.

Methods

Data

Data were collected between October 2020 and January 2021 from 954 Chicago residents ages 18 years and older as part of the COVID-19: Community Opportunities to Protect and Engage (COVID COPE) study. Respondents were recruited through a commercial survey sampling company, Qualtrics, which recruits from a proprietary panel of registered members. Panel members were recruited from multiple sources, including member referrals, targeted email lists, customer loyalty web portals, and social media. Eligible panel members were 18 years of age or older, current residents of Chicago and of Black or White race regardless of Hispanic ethnicity. Although the initial objective of the study was to compare the experiences of Black and White Chicagoans, a significant number of Hispanic Chicagoans responded to the survey, prompting us to expand our race

eligibility criterion. Panel members were randomly selected to participate in the online survey and were only given information about the survey length and available incentives to minimize selection bias based on the survey content. Panelist ID numbers and geographically linked IP addresses are used to prevent respondents from completing the survey more than once but were not shared with the researchers. Industry-standard firewalls and stringent IT security policies and procedures were used to protect respondent data [95]. The study was approved by the University of Illinois, Chicago's Institutional Review Board (IRB). We excluded 48 people in total as they were not age-eligible ($n = 11$); lived outside of Chicago ($n = 36$); or did not identify as Black, White, or Hispanic ($n = 1$). The final analytic sample consisted of 906 respondents with complete data on all key variables.

Study measures

Serious nonspecific psychological distress was assessed with six items from the Kessler 6 (K6) scale that collectively measures the extent to which an individual feels unable to cope with the stresses of daily life [96]. The six items ask respondents how often in the past 30 days they experienced nervousness; experienced hopelessness; felt restless or fidgety; felt so sad or depressed that nothing could cheer them up; felt that everything was an effort; and felt down on themselves, no good, or worthless. Each item is rated on a 4-point scale: 1 = none of the time, 2 = some of the time, 3 = most of the time, and 4 = all of the time. Data on a minimum of two of the six items were required to construct the scale. Items were summed and averaged such that higher scores represent greater feelings of serious psychological distress. The reliability of the scale was acceptable with a Cronbach's α of 0.92.

Employment-related stress was assessed using two questions from the U.S Census Survey [97]. The first question asks, "are you currently employed?" Response options included: 1 = yes full-time, 2 = yes part-time, 3 = no, but seeking employment, and 4 = no, not seeking employment. The second question asks if respondents expect to experience a loss or reduction in employment income in the next 4 weeks because of the COVID-19 pandemic. The response options were 0 = no, 1 = yes, and 2 = unsure. Respondents were coded as 1-experiencing employment stress if they responded that they are currently unemployed but seeking employment or if they expected to experience a reduction in employment income in the next 4 weeks because of the pandemic. Respondents that said they were employed full or part-time, unemployed but not seeking, or did not expect to experience a reduction in employment income were coded as 0 = not experiencing employment stress.

Food insecurity was measured using two questions from the US Census Survey [97]. The first question asks

respondents to select the statements that best described the food eaten in their household since the start of the COVID-19 pandemic. Response options include the following: 1 = enough of the kinds of food (I/we) wanted to eat; 2 = enough, but not always the kinds of food (I/we) wanted to eat; 3 = sometime not enough to eat; and 4 = often not enough to eat. The second question asks respondents how confident they are that their household will be able to afford the kinds of food they need for the next 4 weeks. Respondents were coded as 1 (experiencing food insecurity) if they said they sometimes or often did not have enough to eat or if they were not confident about their household being able to get the kinds of food they need for the next 4 weeks. Respondents that stated they had enough food (regardless of the kinds of food they needed) or were confident they could get the kinds of food they needed were coded as 0 = not experiencing food insecurity.

Housing instability was measured using two questions from the US Census Survey [97]. The first question asks whether the respondent has been served an eviction notice in the past 3 months. The second question asks if the respondent has defaulted on their mortgage or been at risk of foreclosure. Response options for both questions are 1 = yes and 0 = no. Respondents were coded as experiencing housing instability if they said yes to either question.

Race/ethnicity is constructed using three questions. The first question asks respondents if they considered themselves to be Hispanic, Latino, or of Spanish origin. All respondents that said “yes” to this question were categorized as Hispanic regardless of race. The second question asks, “what is your race?” Possible response options included 1 = Black or African American, 2 = White, 3 = American Indian or Alaska Native, 4 = Asian, 5 = Native Hawaiian or Pacific Islander, and 6 = other; multiple races could be selected. Respondents that selected only one race for this question were categorized as such. However, respondents that selected more than one race were shown a third question asking them which of the races selected they identify with primarily. Respondents were then categorized based on the race they primarily identify with. Three racial categories were created that included non-Hispanic Black, non-Hispanic White, and Hispanic. Other races and ethnicities were excluded due to small sample sizes.

Additional covariates include age, gender, sexual orientation, foreign-born status, relationship status, income, and education. Age is measured in years. Females (reference) are compared to all other genders and people who are straight/heterosexual (reference) are compared to LGBT-QIA + respondents. People born in the USA (reference) are compared to those born outside of the USA. There are four categories for relationship status—married (reference), unmarried couple, widowed/divorced/separated, and never married. There are four categories of income: less than

\$20,000 (reference), \$20,000–\$49,999, \$50,000–\$74,999, and \$75,000 or more. There are three categories of education: high school degree or less (reference), some college, and college degree or higher. We combined respondents with less than a high school degree and those with a high school due to the small number of respondents who did not have a high school degree.

Analytic Approach

We conducted chi-square tests to assess differences in sample characteristics by race/ethnicity. Ordinary least square regression models were used to assess the association of employment stress, food insecurity, and housing instability, with psychological distress. At first, we only included the covariates to assess baseline levels of psychological distress net of sociodemographic factors; then, we added all three stressors to determine their effect on psychological distress. Lastly, in separate models, we tested race/ethnic differences in the association between each COVID-related stressor and psychological distress using interaction terms. An omnibus F-test was used to test whether adding the interaction as a whole was a significant improvement in our model before examining individual interaction terms. All analyses were done using STATA/SE 15.1.

Results

Table 1 presents characteristics of the sample by race/ethnicity; significant differences exist for all variables except sexual orientation. Compared to Black and Hispanic respondents, White respondents were older and more likely to be male, born in the USA, married, and to have an income greater than \$75,000 and a college degree or higher. Hispanic respondents had the highest mean level of psychological distress (2.10), followed by White (1.68) and Black (1.56) respondents. More Hispanic respondents experienced housing instability (20%) and employment stress (69%) compared to Black (7%, 64%) and White (8%, 58%) respondents, respectively. Black respondents were more likely to experience food insecurity (48%) compared to White (31%) and Hispanic (39%) respondents.

Table 2 presents linear regression models for the association between COVID-related stressors and psychological distress. Model 1 shows that Black respondents had significantly lower psychological distress compared to White respondents ($\beta = 0.194$, $P < 0.01$) after controlling for all covariates. Psychological distress among Hispanic respondents was not significantly different from White respondents. Model 2 added the COVID-related stressors. Psychological distress was higher for respondents experiencing employment stress ($\beta = 0.290$, $P < 0.01$),

Table 1 Sample characteristics by race/ethnicity: COVID COPE, 2020–2021 ($N=906$)

	White ($n=453$)	Black ($n=349$)	Hispanic ($n=104$)	
Variables	M (SE) or %	M (SE) or %	M (SE) or %	<i>p</i> Value
Psychological distress	1.68 (0.1)	1.56 (0.1)	2.10 (0.1)	<0.01
Employment stress				<0.05
Yes	58.06	64.47	69.23	
No	41.94	35.53	30.77	
Food insecurity				<0.01
Yes	31.13	47.85	39.42	
No	68.87	52.15	60.58	
Housing instability				<0.01
Yes	7.51	7.16	20.19	
No	92.49	92.84	79.81	
Age (years)	44.01 (0.7)	36.10 (0.8)	32.45 (1.1)	<0.01
Sexual orientation				0.09
Straight or Heterosexual	82.78	83	74.04	
LGBTQIA +	17.22	16.91	25.96	
Gender				<0.01
Female	46.14	64.18	50.96	
Other	53.86	35.82	49.04	
Foreign born				<0.01
Born in the USA	98.23	96.85	89.42	
Born outside of the USA	1.77	3.15	10.58	
Relationship status				<0.01
Married	60.93	20.34	46.15	
Unmarried couple	6.4	8.6	6.73	
Widowed/divorced/separated	9.05	14.33	7.69	
Never married/single	23.62	56.73	39.42	
Income				<0.01
Less than \$20,000	4.42	28.65	19.23	
\$20,000–\$49,000	22.3	34.96	27.88	
\$50,000–\$74,999	18.54	15.76	19.23	
\$75,000 or more	54.75	20.63	33.65	
Education				<0.01
High school degree or less	17.44	37.54	41.35	
Some college	26.05	35.24	28.85	
College degree or higher	56.51	27.22	29.81	

housing instability ($\beta=0.456$, $P<0.01$), and food insecurity ($\beta=0.273$, $P<0.01$) compared to those not experiencing these COVID-related stressors. Additionally, the Black-White difference in psychological distress increased in magnitude by 21% with the inclusion of the stressors.

Table 3 presents linear regression models testing the interactions between race/ethnicity and each COVID-related stressor. Model 3 shows that the effect of employment stress on psychological distress is significantly different by race/ethnicity (Fig. 1). Specifically, the effect of employment stress on psychological distress was attenuated among Black compared to White respondents ($\beta = -0.540$, $P<0.05$) and did not differ significantly between Hispanic and White respondents. The interactions between race/ethnicity and

food insecurity (Model 2) and race/ethnicity and housing instability (Model 3) were not significant.

Discussion

A central tenet of stress theory states that exposure and vulnerability to stressors are socially patterned such that social groups with lower social standing experience greater exposure and vulnerability to stressors [83, 98, 99]. Historical and contemporary forms of racism at individual, interpersonal, and institutional levels have created and reinforced racial and ethnic hierarchies that systematically disadvantage Black and Hispanic populations, exposing them to more numerous and more

Table 2 Linear regression models for the association between COVID-related stressors and psychological distress: COVID COPE, 2020–2021 ($N=906$)

Variables	Model 1		Model 2	
	β	95% CI	β	95% CI
Employment stress ^a			0.29***	0.15 to 0.42
Food insecurity post COVID ^b			0.27***	0.13 to 0.40
Housing insecurity ^c			0.46***	0.22 to 0.68
Age continuous	-0.03***	-0.03 to -0.02	-0.02***	-0.02 to -0.01
NH-Black or African American ^d	-0.19**	-0.35 to -0.03	-0.23**	-0.38 to -0.07
Hispanic ^d	0.18	-0.04 to 0.39	0.14	-0.07 to 0.35
LGBTQIA + ^e	0.41***	0.23 to 0.57	0.32***	0.15 to 0.48
Males and other genders ^f	0.18*	0.04 to 0.31	0.09	-0.04 to 0.22
Outside of the USA ^g	-0.19	-0.55 to 0.16	-0.28	-0.63 to 0.07
Unmarried couple ^h	-0.23	-0.50 to 0.03	-0.13	-0.39 to 0.13
Widowed/divorced/separated ^h	-0.10	-0.32 to 0.15	-0.04	-0.27 to 0.19
Never married/single ^h	-0.15	-0.32 to 0.02	-0.05	-0.22 to 0.11
\$20,000–\$49,000 ⁱ	0.12	-0.09 to 0.32	0.13	-0.07 to 0.32
\$50,000–\$74,999 ⁱ	-0.09	-0.32 to 0.15	-0.03	-0.26 to 0.20
\$75,000 or more ⁱ	0.08	-0.15 to 0.30	0.15	-0.06 to 0.37
Some college ^j	0.03	-0.14 to 0.19	0.06	-0.10 to 0.22
College degree or higher ^j	0.10	-0.07 to 0.26	0.18**	0.01 to 0.35
Constant	2.58***	2.23 to 2.92	2.02***	1.66 to 2.39
Model fit statistics				
<i>F</i> value	15.650		17.550	
Prob > <i>F</i>	0.000		0.000	
<i>R</i> -Squared	0.197		0.252	
Adjusted <i>R</i> -squared	0.1848		0.237	

The bold values show significant association between Covid-related stressors and Psychological Distress

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CI confidence interval

^ano employment stress, ^bno food insecurity post COVID, ^cno housing insecurity, ^dNH-White, ^estraight or heterosexual, ^ffemale, ^gin the USA, ^hmarried, ⁱless than \$20,000, ^jhigh school degree or less

severe social stressors compared to their White counterparts [100–102]. Consequently, one would suspect that Black and Hispanic individuals would experience higher levels of psychological distress and worse mental health compared to their White counterparts, especially in the context of a worldwide pandemic that disproportionately and negatively impacted the health, social and economic wellbeing, and livelihoods of communities of color. However, the mental health consequences of COVID-related stressors across these racial/ethnic groups may not align with these theoretical expectations.

Our examination of race/ethnic differences in psychological distress and in the effects of COVID-related stressors on levels of distress during the first year of the COVID-19 pandemic revealed substantial racial and ethnic heterogeneity. First, psychological distress among Black Chicagoans was significantly lower than distress among White and Hispanic populations. Moreover, accounting for COVID-related social and economic stressors increased the magnitude of this difference, suggesting that psychological distress would be even lower among Black adults living in Chicago if they

were not disproportionately exposed to these stressors. Our findings align with prior research documenting a mental health advantage among Black adults (i.e., the Black-White mental health paradox [11, 89, 103]). A prevailing explanation for why Black adults experience less psychological distress compared to White adults pertains to differences in internal (i.e., psychosocial) coping resources. Systemic racism and discrimination have limited access to social and material resources in Black communities and have disproportionately exposed them to social, environmental, and psychological stressors [104]. In response, Black Americans have had to cope with racism-related experiences and social conditions using on *intrapersonal* resources—the internal psychological constructs, abilities or behaviors such as hopefulness and religiosity—and interpersonal resources, which are the psychosocial supports that come from outside one's self through relationships with family, friends, and religious communities, for example [105], to address racism-related experiences and social conditions. These resources have been shown to protect against poor mental health in

Table 3 Race/ethnic differences in the association of COVID-related stressors and psychological distress: COVID COPE, 2020–2021 ($N=906$)

Variables	Model 1		Model 2		Model 3	
	β	95% CI	β	95% CI	β	95% CI
Interaction effects						
NH-Black and employment stress ^a	-0.54***	-0.81 to -0.26				
Hispanic and employment stress ^a	-0.04	-0.47 to 0.39				
NH-Black and food insecure ^b			-0.11	-0.38 to 0.16		
Hispanic and food insecure ^b			-0.14	-0.56 to 0.27		
NH-Black and housing insecure ^c					-0.27	-0.78 to -0.24
Hispanic and housing insecure ^c					-0.43	-1.00 to 0.13
Main effects						
Employment stress ^d	0.50***	0.31 to 0.68	0.29***	0.15 to 0.42	0.29***	0.15 to 0.42
Food insecurity post COVID ^e	0.26***	0.12 to 0.39	0.34**	0.14 to 0.52	0.27***	0.13 to 0.40
Housing insecurity ^f	0.44***	0.21 to 0.67	0.46***	0.22 to 0.68	0.65***	0.30 to 0.98
NH-Black or African American ^g	0.10	-0.12 to 0.32	-0.19*	-0.37 to 0.00	-0.21**	-0.36 to -0.05
Hispanic ^g	0.14	-0.2 to 0.507	0.19	-0.07 to 0.46	0.20	-0.02 to 0.43
Constant	1.95***	1.58 to 2.31	2.01***	1.64 to 2.38	2.02***	1.64 to 2.38
Model fit statistics						
<i>F</i> value	16.79		15.73		15.85	
Prob > <i>F</i>	0.000		0.000		0.000	
<i>R</i> -squared	0.265		0.252		0.254	
Adjusted <i>R</i> -squared	0.249		0.236		0.238	

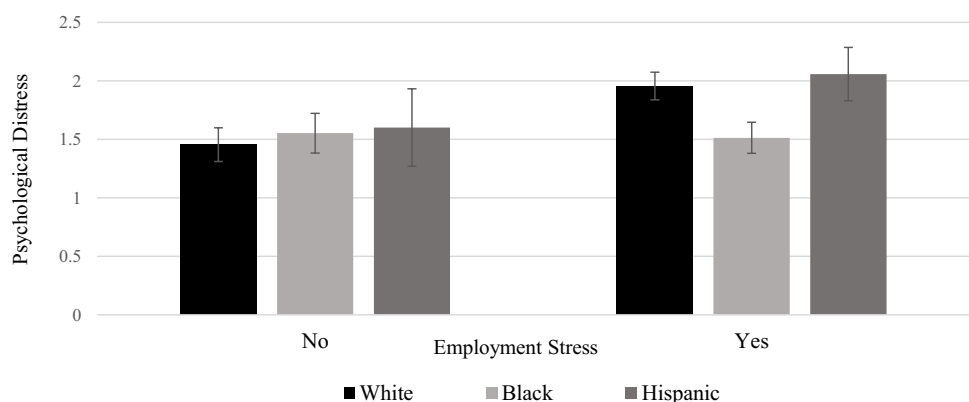
The bold values show significance of the interaction effects of race/ethnicity and employment stress

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; *CI* confidence interval

^aNH-Black/Hispanic with no employment stress, ^bNH-Black/Hispanic and not food insecure, ^cNH-Black/Hispanic and not housing insecure, ^dno employment stress, ^eno food insecurity post COVID, ^fno housing insecurity, ^gNH-White

Model controls for age, gender, sexual orientation, foreign born status, marital status, income, and education

Fig. 1 The association between employment stress and psychological distress by race/ethnicity: COVID COPE, 2020–2021 ($n=906$)



the Black adult population (see Mitchell et. al. [106] for a review) and may be particularly beneficial during a rapidly evolving and emergent situation, such as a pandemic, because they are more immediately at one's disposal.

Explanations for our findings about racial/ethnic differences in the effects of COVID-related stressors on psychological distress are less clear. Our study showed that employment stress, food insecurity, and housing instability contributed to greater psychological distress during the pandemic. However, employment-related stress exacted less of a

psychological toll on Black respondents compared to White and Hispanic respondents. In fact, levels of psychological distress did not differ between Black respondents who reported or did not report experiencing employment stress, while it increased significantly for the other two racial/ethnic groups when exposed to employment stress. It is possible that employment-related stressors were less concerning among Black persons during the early parts of the pandemic relative to other groups. For instance, a study conducted prior to the onset of the pandemic documented significant

race/ethnic differences in the appraisal of ongoing chronic stressors [107]. Specifically, Black adults were less likely to be upset by ongoing financial stressors despite their higher levels of exposure to financial stress. Similarly, in a national study of COVID-related stress and worry, McKnight-Eily et al. found that during the pandemic, fewer Black respondents were concerned about job or income loss relative to White, Hispanic, and other non-Hispanic respondents [4]. Thus, the mental health of Black Chicagoans in our sample may be less affected by COVID-related job or financial stressors because they are not considered stressful as other experiences during the pandemic.

It is also possible that during the pandemic, Black individuals were more likely to receive or rely on other sources of financial support to mitigate the negative effects of employment loss and related financial hardship on mental health. The federal Coronavirus Aid, Relief, and Economic Security (CARES) Act of March 2020 [108] and the COVID-19 relief package of January 2021 [109], respectively, expanded unemployment insurance benefits and provided direct payments to individuals during the pandemic. These efforts at the federal level likely reduced financial hardship for all who received the benefits and potentially alleviated some of their financial stress related to changes in employment status and income. That said, instrumental familial support in the form of financial assistance may be particularly relevant for the livelihood and wellbeing of Black individuals [110–112] due to historic exclusion from formal financial assistance programs and institutions [113]. Recent research suggests that Black individuals are more likely to provide financial support to immediate and extended family members, particularly among middle- and high-income households [114]. General measures of family support are associated with better mental health among Black individuals [115], a finding that may extend to the receipt of financial support from family members and contribute to the diminished effect of employment-related stress on the mental health of Black individuals. Future research should more extensively examine the nuanced relationship between formal and informal sources of instrumental support during the pandemic and racial/ethnic differences in their effects.

Unlike our findings for Black respondents, levels of psychological distress among Hispanic respondents were similar to levels seen among White respondents; moreover, the effects of COVID-related stressors on their mental health did not differ from Whites. Although these findings align with our general hypothesis regarding the negative effects of COVID-related stressors on psychological distress, we expected the findings for our Hispanic population to be similar to those of our Black respondents because Hispanic Chicagoans were also disproportionately affected by the pandemic relative to Whites [116]. Findings for Hispanics may be more similar to those of White respondents because,

in this sample, the two groups share some social, economic, and demographic characteristics that are relevant to mental health and to the effects of COVID-related stressors on mental health. For instance, 46% and 51% of Whites and Hispanics self-identified as female, respectively, compared to 64% of Black respondents (see Table 1). Additionally, the relationship status and income distributions for Hispanic respondents were closer to those of White respondents than Black ones and a larger proportion of Hispanics lived in more affluent neighborhoods of Chicago compared to Blacks. For example, supplemental analysis of zip code data revealed that nearly 25% of our Hispanic sample lived in the downtown “Loop” area of the city—which had a median household income of \$108,676 based on the 2015–2019 American Community Survey [117]—compared to only 5% of our Black sample (data not shown). For these reasons, the relationship between stress exposure and psychological distress may be more similar for Hispanic and White respondents, particularly if the neighborhoods in which they live offer comparable community resources for dealing with the stress of the pandemic. A more detailed analysis of how these resources influenced the effects of COVID-related stressors on mental health across different racial/ethnic groups would be beneficial for future research on differential stress exposure and vulnerability.

Limitations

The findings of this study should be considered within the context of its limitations. A primary limitation is the use of a non-representative sample of White, Black, and Hispanic Chicagoans that excludes other racial/ethnic groups that were also impacted by pandemic-related stressors (e.g., indigenous populations, Asian Americans). This limitation hinders generalizability of our findings beyond the current sample and to other populations disproportionately affected by the pandemic. Additionally, our sample had higher household incomes and levels of educational attainment compared to the general Chicago population, which limits the generalizability of our findings to individuals of lower socioeconomic status. However, our sampling strategy allowed us to recruit an overall sample and race-specific samples large enough for testing multiple interaction effects. Another limitation is that we did not evaluate pre-pandemic experiences of stress, particularly housing instability and food insecurity. It is possible that the onset or worsening of these stressors may be more impactful for mental health than the continuation of pre-existing stressors that a person may have already had adapted to. Relatedly, our study uses a cross-sectional study design which limits our ability to determine the temporal relationship between stressors and mental health and to make causal inferences. Lastly, all our measures are

self-reported, which makes response bias a potential issue, and we used binary stress measures that limit our ability to capture the full range of stress exposure and severity. To address these limitations, future studies should (1) utilize a probability-based sampling strategy to allow for generalizability beyond the study sample and (2) utilize pre-pandemic measures of stress exposure and psychological distress to allow for a longitudinal evaluation of their relationship.

Conclusion and Implications

Collectively, the findings from this study highlight racial and ethnic differences in the experience of COVID-related stressors and their impact on mental health. In line with our hypotheses, housing instability and food insecurity adversely affected mental health by increasing symptoms of psychological distress for all individuals. Employment stress, however, was not related to psychological distress among Black Chicagoans despite a higher prevalence of this stressor in this population. Moreover, Black respondents reported fewer symptoms of psychological distress compared to White and Hispanic respondents. Although these findings counter hypotheses put forth by social stress theory and empirical research demonstrating greater vulnerability to stress among racial and ethnic minorities [72, 118], they potentially reflect the effects of different coping processes and resources that may be race- and/or stressor-specific.

Future research is needed to elucidate the nuances of the relationships between the different stressors, race/ethnicity, and psychological distress and to identify individual and community-level policies and interventions that (1) prevent and minimize the impact of employment, food, and housing-related stressors and (2) support coping mechanisms that promote mental health generally and particularly among minoritized populations. For instance, public health practitioners develop culturally tailored and targeted resources that support the coping mechanisms used in Black and Hispanics communities, particularly interventions that promote social connection and engagement with loved ones and religious institutions during times of social distancing (e.g., better access to affordable internet, computers and other methods of virtual connection). Furthermore, given the impact of employment, housing, and food-related stressors on psychological distress during the pandemic, the public health response should seek to relieve these stressors through interventions that provide financial assistance (e.g., in the form of stimulus payments or pauses on utility and housing payments) and policies that support flexible work environments and free and easy access to mental health supports. Engaging in these research and practice-based endeavors is paramount for addressing the mental health crises of the COVID-19 pandemic, particularly among disadvantaged populations, and for preparing for future pandemics and national traumas.

Author Contribution All authors contributed to the study conception and design. Material preparation and data collection were performed by Nadia Al-Amin, Aminah McBryde-Redzovic, and Melissa Gutierrez-Kapheim. Data analysis was performed by Nadia Al-Amin. The first draft of the manuscript was written by Nadia Al-Amin, Aminah McBryde-Redzovic, and Uchechi Mitchell, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data Availability The datasets generated during and/or analyzed during the current study are not publicly available in order to protect the identities of our survey respondents. Data are available from the corresponding author on reasonable request.

Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. The study design was reviewed and approved by the Institutional Review Board of the University of Illinois Chicago on 07/31/2020.

Consent to Participate Informed consent was obtained from all participants included in the study.

Consent for Publication The authors affirm that human research participants provided informed consent for publication of the study findings data.

Competing Interests The authors declare no competing interests.

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