The Impact of Workplace Protections on Worker Wellbeing During the COVID Pandemic

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The Impact of Workplace Protections on Worker Wellbeing During the COVID Pandemic

A Thesis
Presented in Partial Fulfillment
of the Requirements for the Degree
of Master of Arts

By
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May 25, 2022

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Biography

Brooke Nyberg was born in Kirkland, Washington on January 22, 1997. She grew up just outside of Seattle for 11 years before moving to Phoenix, Arizona with her parents and older sister. She attended Desert Vista High school until 2015 and then got her two Bachelors’ degrees in Psychology and Criminology at Northern Arizona University in 2019. At Northern Arizona University she had her first experiences with Industrial Organizational Psychology in Dr. Ann Huffman’s lab as an undergraduate research assistant.

In 2019, she was accepted into DePaul University’s Industrial Organizational Psychology PhD program in Chicago, Illinois. Her research interests started in the domains of DEI, employee wellbeing, interpersonal relationships, and personality. She worked on this thesis during her second and third year of graduate school and has worked on research involving negotiation, NASA teams, again and emotions, and more. She currently interns for Axiom Consulting Partners, working on assessment centers and other consulting projects.
# Table of Contents

Abstract ....................................................................................................................... 1  
Job Demands-Resources Model ..................................................................................... 3  
Essential Workers ........................................................................................................ 5  
Job Insecurity ............................................................................................................... 6  
Race-Differences and COVID-19 ................................................................................ 8  
Socioeconomic Status ................................................................................................. 9  
COVID-Related Risk Perceptions .............................................................................. 10  
Employee Emotional & Psychological Wellbeing ...................................................... 11  
Organizational Protective Practices .......................................................................... 13  
The Current Study ....................................................................................................... 15  
Method ......................................................................................................................... 20  
Participants ................................................................................................................. 20  
Procedure .................................................................................................................... 23  
Measures ..................................................................................................................... 24  
COVID-Related Risk Perceptions .............................................................................. 24  
Wellbeing .................................................................................................................... 25  
Organizational Protective Practices .......................................................................... 26  
Job Insecurity ............................................................................................................... 27  
Essential Status ......................................................................................................... 27  
Results ......................................................................................................................... 28  
Discussion .................................................................................................................. 41  
References .................................................................................................................. 49  
Appendix A: COVID-19 Related Questions / Risk Perceptions .................................. 57
Appendix B: Perceived Stress Scale (PSS) .................................................................58
Appendix C: Mental Health Continuum – Short Form (MHC-SF) .........................59
Appendix D: OSHA Guidelines ...........................................................................60
Appendix E: Family Supportive Supervisor Behaviors ......................................63
Appendix F: Job Insecurity Scale – Threat to Total Job (Modified) ......................65
Appendix G: Demographics ...............................................................................66
Appendix H: Informed Consent ............................................................................70
List of Tables

Table 1. Demographic Characteristics of Participants……………………………..21
Table 2. Demographic Characteristics of Participants……………………………..22
Table 3. Descriptive Statistics and Correlations for Study Variables……………..29
Table 4. Regression Analysis for Mediation of COVID-Related Risk Perceptions
between Essential Worker Status and Wellbeing…………………………………32
Table 5. Regression Analysis for Moderation of Protection Practices on the
Mediation of COVID-Related Risk Perceptions between Essential Worker Status
and Wellbeing …………………………………………………………………………34
Table 6. Regression Analysis for Mediation of COVID-Related Risk Perceptions
between Job Insecurity and Wellbeing………………………………………………35
Table 7. Regression Analysis for Moderation of FSSBs on the Mediation of
COVID-Related Risk Perceptions between Job Insecurity and Wellbeing………37
Table 8. Regression Analysis for Moderation of OSHA on the Mediation of
COVID-Related Risk Perceptions between Job Insecurity and Wellbeing………38
List of Figures

Figure 1. ........................................................................................................17
Figure 2. ........................................................................................................17
Figure 3. ........................................................................................................17
Figure 4. ........................................................................................................18
Figure 5. ........................................................................................................18
Figure 6. ........................................................................................................19
Figure 7. ........................................................................................................19
Abstract
During the pandemic, workers have been affected in a variety of ways. COVID-19’s impact has permeated through all communities and has more harshly affected minority communities such as Black communities, and those deemed as essential workers. Although, in this study there were no differences between Black and White perceptions of COVID-related risks or job insecurity. The negative effects of these increased risks were expected to be buffered by protective practices such as following the Occupational Safety and Health Administration (OSHA) suggestions and by supervisors practicing family supportive supervisor behaviors (FSSBs), however results showed that these did not act as buffers. While there were no moderating effects of protective practices, FSSBs did predict higher levels of positive mental health. Further results and implications are discussed.

Keywords: job demands-resources model, COVID19, employee wellbeing, essential worker, family supportive supervisor behaviors (FSSB), OSHA, race
The Impact of Workplace Protections on Worker Wellbeing During the COVID Pandemic

After more than two years, COVID-19 continues to have a significant impact on the lives of people around the world. More specifically, COVID-19 has required working individuals to make multiple changes such as changes in work hours, use of protective equipment, or work from home. One change, due to the pandemic, is that many employees were deemed essential – requiring them to work even if there is a higher risk in catching the virus (McNicholas & Poydock, 2020). Others have lost their jobs or are working less leading them to feelings of greater job insecurity (U.S. Bureau of Labor Statistics, 2020). Based on the job demand-resources model (JDR), created by Demerouti et al. (2001), these changes in essential status and increases in job insecurity can be seen as demands that loosely fit into the JDR model. Furthermore, being a part of different racial communities or SES levels may affect these demands. Research has shown that different communities are experiencing more of an impact from COVID-19. African American and/or Black and lower socioeconomic status (SES) communities are experiencing more cases of COVID-19, including more deaths (Gould, Perez, & Wilson, 2020; Gould & Wilson, 2020). These communities likely felt at more risk for not only the virus, but also more uncertainty when it comes to their jobs and finances. According to the JDR model, jobs with high demands can increase stress. However, the model posits that stress can be lessened by having workplace or personal resources.

In response to this virus, many organizations chose to, or were required to implement protective practices such as wearing masks or using barriers to keep their employees and customers safe. Several businesses adjusted their policies regarding
working locations, family supportive policies, and more. The number of protective practices that a business uses may allow employees to feel more in control, safer, and more supported, even if they are at risk for the virus. In addition, the implementation of flexible work policies may buffer the negative impacts of health-and financial-related risks on emotional and psychological wellbeing. This thesis will be guided by the JDR model and plans on assessing the extent to which COVID-19 has negatively impacted wellbeing for a) Black/African American individuals, b) those who are low SES, c) those who are considered essential workers, or d) those with high job insecurity due to the pandemic. Some individuals could fall into many of these groups, which further underscores how important it is to understand how emotional and psychological wellbeing is being affected for people falling in these high-risk groups. This thesis proposes that employees experiencing greater demands (e.g., essential workers and those with high job insecurity) will perceive greater health and financial risk and will experience more negative wellbeing due to COVID-19. Moreover, Black essential workers and Black workers who are experiencing high job insecurity will perceive greater health and financial risks than White workers. It is also possible that SES may have an impact on risk perceptions. Finally, having more resources through organizations implementing protective practices such as those described by the Occupational Safety and Health Administration (OSHA), and family supportive supervisor behaviors (FSSBs) will decrease the impact of perceived risk on negative wellbeing.

**Job Demands-Resources Model**

The job demands-resources (JDR) model by Demerouti et al. (2001) was created to describe work circumstances that affect and lead to employee stress-related outcomes.
When job demands become stressors and the employee does not have the resources to cope with them, then this leads to outcomes such as high stress and/or burnout. (Demerouti et al., 2001; Bakker & Demerouti et al., 2007). Job demands are defined as aspects of a job that “require sustained physical or mental effort” which then lead to certain “physiological and psychological costs” (Demerouti et al., 2001, p. 501). Examples of demands include work pressure, difficult physical environments, emotional demands, work overload, harassment, and work-home conflicts (Bakker & Demerouti, 2007; Schaufeli, 2017). Job resources are any “physical, psychological, social, or organizational” parts of a job that can “[be] functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, [and/or] stimulate personal growth, learning, and development” (Bakker & Demerouti, 2007, p. 312). When an employee experiences constant job demands over sustained period, they have been found to experience exhaustion which can lead to addition health problems (Bakker & Demerouti, 2007). Furthermore, when an employee experiences high levels of resources, they have been found to be more motivated and show higher job engagement (Bakker & Demerouti, 2007). There has also been evidence of an interaction between job demands and resources. For example, Bakker et al. (2005) found that burnout in jobs with high demands did not always occur if the employees had resources such as autonomy and social support. Job resources are critical to functioning in one’s work, especially if the employee is in a demanding job.

This thesis aims to understand how employee wellbeing is affected by demands such as essential worker status, job insecurity, and COVID-19 health and financial risks. Each of these can be considered demands as they require more psychological effort to be
exerted. For example, working during a pandemic has been found to be emotionally taxing (Kamal et al., 2020). However, even with such demands, the impact these demands have on an employee’s wellbeing may lessen with an increase in resources such as the implementation of OSHA workplace guidelines to protect employees against COVID-19 and family supportive supervisor behaviors (FSSBs). Following OSHA guidelines can be considered a resource as they may be reducing physiological and psychological costs associated with contracting COVID-19 by protecting employees through engaging in hygiene, flexible work hours, and promotion of social distancing. In addition, FSSBs are a resource as they are effective at reducing multiple demands such as work-life conflict which may help an employee achieve more of their work goals. Moreover, this demand-resources relationship may change based on the race or SES of an employee.

**Essential Workers**

Within the JD-R model, being an essential worker may be considered a job demand because of the associated increased risks. Essential workers are regarded necessary in continuing their work because they perform critical functions within the country (“Essential Workforce,” 2020). Multiple states have defined essential workers, but many have based their definitions and policies on the California government’s approach (McNicholas & Poydock, 2020). The California governor declared that 13 industries are essential, including healthcare, emergency services, food and agriculture, energy, and water and wastewater (“Essential Workforce,” 2020). Within each of these industries, there are specific guidelines as to which jobs are essential. These guidelines were decided based on who is critical for the adequate functioning of society. Some
examples of essential jobs include transportation drivers to medical facilities, grocery workers, food sanitation employees, welders, bankers, and retail workers.

COVID-19 had a great impact on those that cannot work from home (Irlacher & Koch, 2020). For essential employees, many could not work from home, therefore they are experiencing more risk of contracting the virus by working in public, unprotected locations (McNicholas & Poydock, 2020). The U.S. Department of Labor (2020b) Occupational Safety and Health Administration (OSHA) issued a document explaining the four levels of risk that different types of employees may face: lower exposure, medium exposure, high exposure, and very high exposure. Any job that requires contact with the public falls within the medium exposure risk, and those that work in the medical field range from high to very high risk (U.S. Department of Labor, 2020b). This risk of contracting COVID, as an essential worker, may not only be affecting whether one is likely to contract the virus, but also their emotional and psychological wellbeing. Shevlin et al. (2020) found that those who felt more at risk for contracting COVID experienced higher levels of anxiety and depression.

**Job Insecurity**

Since the start of the COVID-19 pandemic, there have been many policies put in place to mitigate people’s exposure to the risk within the workplace, but in doing so, many people have been subjected to changes in employment as a result. Some of these changes stem from businesses being required to shut down or to reduce or change their hours of operation (U.S. Bureau of Labor Statistics, 2020). Because businesses are required to change, employees are likely experiencing job insecurity. Job insecurity has been defined as “perceived powerlessness to maintain desired continuity in a threatened
job situation” (Greenhalgh & Rosenblatt, 1984, p. 438). Within the JDR model, job insecurity may fit as a demand because of the pressures or risks that are associated with perceptions of losing one’s job. Job insecurity has been theorized to have multiple dimensions, with one being a perceived threat to one’s total job including losing a job, furlough, or a dramatic change in billable hours (Ashford, Lee, & Bobko, 1989).

Throughout the pandemic, many have not only perceived these threats, but they have experienced them. For example, many have lost their jobs or must work less hours, while others are unsure if their place of work will remain open (Coibion, Gorodnichenko, & Weber 2020; von Gaudecker et al., 2020). The U.S. Bureau of Labor Statistics (2020) found that during February of 2019, when the pandemic started, the unemployment rate jumped from 4% to 14%, and is currently decreasing, but is still much higher than 4%. In December of 2020, over 15 million people, aged 16 or higher, could not work because their employer closed or lost business. Of those that lost their jobs or received decreased hours, only 12.8% received pay.

While changes in employment are relatively normal, the rate of change during COVID-19 has increased dramatically (U.S. Bureau of Labor Statistics, 2020). These high rates of change in employment have been associated with job insecurity (Wilson et al., 2020). Job insecurity during the current pandemic has been found to be related to increased psychological distress (Wilson et al., 2020). Furthermore, Shevlin et al. (2020) found that experiences of income loss or generally low income predict anxiety and depression. In addition, the ambiguity of gaining, losing, or keeping employment is increasing problems such as stress, competitiveness between workers, inequalities between communities, and more for a large population of workers (Kniffín et al., 2020).
Kniffin et al. (2020) reports that financial problems can cause hardship for the entire family, not just the individual. Specifically, without income, the guardian/working individual may not have the ability to provide basic necessities, which could further compound the stress associated with financial hardship. Stable employment provides benefits beyond just finances, therefore losing employment permeates most aspects of one’s life. The unemployed individual may no longer have a structured schedule, external activities, work friends, and more that was once available because of their job. It is clear that job insecurity has a significant impact on individuals and families. These detrimental effects of job loss are also intensified across different subgroups of the population.

**Race-Differences and COVID-19**

Identifying as Black or African American may further exaggerate the effects of high job demands on stress. Black populations have experienced a disproportionate number of COVID-19 cases within their communities (Center for Disease Control and Prevention, 2020). More specifically, in November 2020, Black and African Americans have had 1.4 times the number of cases, 3.7 times the number of hospitalizations, and 2.8 times more deaths than Whites (Center for Disease Control and Prevention, 2020). Figueroa et al. (2020) speculated that this increased number of cases may be due to living in multi-residential buildings, higher usage of public transit, higher likelihood of living in populated cities, larger numbers in prisons, and more elderly living in low-funded nursing homes. In addition, Gould and Wilson (2020) discuss how Black communities have, in general, higher unemployment rates, higher poverty rates, and more households with a single earner or single parent. These differences have been argued to be systematically caused (Selden & Berdahl, 2020). Selden and Berdahl (2020) explain that people who are
Black are more likely to be working in the essential industries of healthcare and public safety compared to White people during the pandemic. More White men and White women have jobs that allowed them to work from home than Black men and Black women, objectively putting more Black people at risk. According to Gould and Wilson (2020), the unemployment rate in April of 2020 in Black communities was 16.7% in comparison to 14.2% in White communities, with Black women experiencing the highest rate overall at 16.9%. Between February and April 2020, Black workers experienced a decrease in employment by 10.6 percentage points. In addition, Watson et al. (2020) found that there were multiple inequities when it comes to healthcare for Black individuals. Gould and Wilson (2020) summarized that Black communities have more cases of chronic illness, which often puts people at a higher risk for COVID-19. Taken together, this large number of cases, job losses, and risk has had a devastating effect for many Black individuals and families.

**Socioeconomic Status**

Low socioeconomic status (SES) may increase the negative effects of having high demands. Similar to different racial communities, communities with lower social economic statuses (SES) are experiencing more problems because of COVID-19 (Raifman & Raifman, 2020). Watson et al. (2020) explains that socioeconomic classes are becoming even more polarized, leaving low-income workers even more at risk. The Federal Reserve (2020) explains how workers with lower incomes experienced more job loss during March of 2020. Raifman and Raifman (2020) describe how people living in low-income households work in businesses that have remained open during times when non-essential workplaces are closed. In addition, those who have low SES are more likely
to live in high density households, such as with many family members, which affects the ability to socially distance or quarantine. Many low SES communities were seeing inequalities in many areas including food availability, transportation, and COVID-related deaths (Laster Pirtle, 2020). Because of the job insecurities that many are facing, such as not being able to work from home and higher unemployment rates, these inequalities may become even more vast (Irlacher & Koch, 2020). It is possible that low SES may increase the effects of high job demands on stress. In support of the JDR model, those in lower income communities likely experience more stress than higher income communities (Taylor et al., 2020). This suggests that the health and financial risks experienced in low SES communities due to COVID is disproportionately greater compared to middle- and upper-class communities.

COVID-Related Risk Perceptions

In the workplace, being at high risk for health or financial problems can also be considered job demands. There are many different risks associated with COVID-19. The most widely discussed risks are the physical health risks due to the virus such as respiratory problems. Different populations are at higher risk of contracting the virus, specifically, low-income and minority populations (Gould et al., 2020; Gould & Wilson, 2020). In addition, those that cannot work from home have more of a risk of getting the virus (Gould & Wilson, 2020). While these populations may be at higher risk for health-related problems, perceptions of risk are also high in many different populations and countries (Dryhurst et al., 2020). On one end, individuals who have contracted the virus personally perceive higher risk than those who have not experienced it (Dryhurst et al., 2020). Moreover, communities with a higher proportion of cases may be perceiving
higher health-related risks. In addition, individuals with mental health problems and those who do not have the ability to manage with the virus, if they contracted it, also felt more at risk (Yildirim & Guler, 2020). On the other end, men and those with more conservative political ideologies were found to have lower risk perceptions than women and people with more liberal political ideologies (Dryhurst et al., 2020).

Not only could health-related risks be seen as job demands, but financial risks could be as well. In March 2020, approximately 40% of employees who earn $40,000 or less were furloughed or lost their jobs due to the pandemic in March (Federal Reserve, 2020) and 19% of all adults experienced job loss or reduced hours (Federal Reserve, 2020). Small businesses were unable to maintain cash reserves, have needed to lay off employees, and are not getting the financial assistance they need (Bartik et al., 2020). With the uncertainty of maintaining regular work hours, many people were feeling less secure when it comes to their finances (Keeter, 2020). Forty-seven percent of adults felt that COVID-19 was at least a minor threat to their financial security (Keeter, 2020). Wilson et al. (2020) found that more than 30% of their participants were concerned about their finances. Financial risk perceptions are having a significant impact on these employees because, for example, job insecurity coupled with high financial concern has been shown to lead to mental health problems such as anxiety symptoms.

**Employee Emotional & Psychological Wellbeing**

The demands stated previously (i.e., essential status, job insecurity and risk perceptions) may be impacting one’s wellbeing. Emotional and psychological wellbeing are crucial in maintaining overall health (Stewart-Brown, 1998). Problems with emotional wellbeing has been associated with physical wellbeing such as infections and
cardiovascular disease (Stewart-Brown, 1998). There is a clear physical threat of contracting the virus: cough, fever, death. Yet, COVID-19 may pose an additional emotional and psychological threats: increased stress (Park et al., 2020), anxiety (Sher, 2020), and depression (Sher, 2020). And the threat of COVID-19 does not have to be immediately pressing (e.g., waiting for test results) or personally experienced (e.g., actually having the virus). Simply reading about the virus has been found to induce stress (Park et al., 2020). Outside of the physical threat, there are other aspects of the COVID-19 pandemic that have been reported as causes of stress: socially distancing measures, quarantine, finances, and having to make changes to one’s daily life (Park et al., 2020; Taylor et al., 2020). Even more impactful are those that are experiencing trauma from having COVID or knowing someone who had the virus (Taylor et al., 2020). In response to these stressors, common coping mechanisms reported include overeating or excessive drug use or drinking. Yet both of these coping mechanisms have been deemed unhealthy and could potentially lead to physical illness (Taylor et al., 2020; Stewart-Brown, 1998).

Individuals who perceive themselves at a higher risk for contracting the virus may be even more vulnerable to experiencing emotional and psychological distress. For example, specific populations who have a greater risk of contracting the virus (e.g., essential workers, marginalized community members, and those who cannot work from home) may be more likely to have a decline in their wellbeing. Note that more Black individuals are essential workers and generally might not be able to work from home. Thus, the extent to which the pandemic has deleterious effects on one’s life and wellbeing may not be universal. There has been recent work to demonstrate this: Taylor
et al. (2020) found a significant difference in stress levels between White people and Black people, with Whites having the lowest levels of stress.

In addition, those who are more likely facing financial insecurities or risks of losing their jobs and income may also experience a decline in their wellbeing. Burgard, Brand, and House (2009) discovered that persistent feelings of job insecurity was a predictor of health and depression symptoms. Moreover, Wilson and colleagues (2020) found that job insecurity due to COVID-19 was associated with more depression symptoms and more financial concern was associated with more anxiety symptoms.

**Organizational Protective Practices**

Organizational protective practices can be considered resources within the JDR model, as they may be helping employees mitigate the negative effects of demands on wellbeing. Protecting employees at work is necessary in many instances, especially in light of the pandemic. The physical and mental health of workers are more threatened due to the pandemic, especially those who cannot work from home (Irlacher & Koch, 2020). Workplaces vary in how they protect their employees, depending on the goals and type of organization. The construct of safety climate helps to explain how workplaces make their employees feel safe and how they encourage their employees to behave in a safe manner (Williamson et al., 1997). Williamson et al. (1997) explains three factors important to establishing a safety climate: 1) the need for employees to perceive their managers as valuing employee wellbeing, 2) effective response to problems with wellbeing, and 3) effective responses to problems with risk. Other researchers have found only two factors: 1) “management commitment to safety, and 2) workers’ involvement in safety” (Williamson et al., 1997, p. 16). Both of these include how management reacts to safety
concerns and how they value their employee’s safety. According to Leitao et al. (2018), establishing a safety climate helps to improve worker efficacy and wellbeing. During the pandemic, different states have required or suggested that organizations implement COVID-specific protective practices. Specially, Occupation Health and Safety Administration (OSHA) assembled guidelines and standards that employers can implement to keep their employees and customers physically safe.

In addition, the Society for Human Resource Management (2020) explains the new norm of needed flexibility when it comes to work. Many workers need different hours or the ability to work from home. Others need more support when it comes to their home-life. Employees that have more flexibility and support from their workplace typically have better wellbeing (Lapierre & Allen, 2006). Because of this need for more support, family-supportive supervisor behavior during the pandemic may help employees who are vulnerable to the threats associated with COVID-19 to maintain a healthy wellbeing.

**OSHA Guidelines**

Government agencies have released guidelines to help working individuals reduce their risk of contracting COVID-19. One specific organization, the Occupational Safety and Health Administration (OSHA), released guidelines and suggestions for businesses to keep their employees and customers safe during the pandemic. These standards were created to prevent exposure to the coronavirus (U.S. Department of Labor, 2020a). Because of the risks associated with the virus, many individuals and organizations have proposed that workplaces need to implement policies to protect their employees (Larochelle, 2020). While many states and cities were enforcing these standards in 2020
and 2021, some were not (U.S. Department of Labor, 2020a). The differences in levels of protective practices being used may impact the wellbeing that employees are experiencing. If employees who already feel more at risk (e.g., Black, low SES) see more of the OSHA guidelines being followed at their place of work, then they may have better wellbeing than those who do not perceive the guidelines as being followed. Because of this impact on wellbeing, the OSHA guidelines were considered a job resource. In addition to modifications to one’s physical environment, organizations can provide support through the social environment, including supervisor behaviors.

**Family-Supportive Supervisor Behavior**

Research finds employees are increasingly interested in and affected by flexibility in the workplace (Hammer et al., 2009). One source of flexibility can be provided by supervisors and their support for work-life harmony. Family-Supportive Supervisor Behaviors (FSSB) “is defined as those behaviors exhibited by supervisors that are supportive of families and consists of the following four dimensions—emotional support, instrumental support, role modeling behaviors, and creative work-family management” (Hammer et al., 2009, p. 3). Employees who have accommodating supervisors often feel less of a burden from their workload and have fewer work-related stressors (Lapierre & Allen, 2006). When one’s boss is supportive of personal needs, a person feels less work-related distress (Lapierre & Allen, 2006). Because FSSBs help employees to feel supported, they may act as a protective factor or be considered a job resource for those who perceive more risk and vulnerability from the pandemic. It seems likely that FSSBs may be particularly important in the time of COVID to promote employee wellbeing.

**The Current Study**
Based on previous research, understanding which communities are being impacted and possibly how to buffer this impact is necessary. This study references the JD-R model to understand how organizational protective practices (job resources) affect the wellbeing of vulnerable employees and groups with increased difficulties (job demands) including essential workers and those with high job insecurity. More specifically, this thesis analyzed whether essential workers and those experiencing job insecurity perceived different levels of risks such as financial or health risks. However, both health and financial risks were analyzed together, then if substantial differences were found, additional post hoc exploratory analyses were completed. It is also likely that the risk perceptions of essential workers or those with high job insecurity would be more apparent based on an employee’s demographics such as race or SES. Because of these increased perceptions of risks, the emotional and psychological wellbeing of these employees were analyzed. Lastly, this thesis analyzed how employers were using protective practices in an effort the mitigate and/or buffer against threats to wellbeing induced by COVID-19. The extent to which one’s employer implemented OSHA guidelines and used FSSBs were separately assessed to understand whether they had a buffering effect on the relationship between risk perceptions and wellbeing. The hypotheses and research questions for this current research are as follows:

1. **Hypothesis I.** Essential workers, in comparison to non-essential workers, have higher perceptions of COVID-related risks.

   a. **Hypothesis Ia.** Black essential workers have higher risk perceptions than White essential workers. See figure 1.
2. **Hypothesis II.** Workers with high job insecurity report higher COVID-related risk perceptions than those with lower job insecurity.
   
a. **Hypothesis IIa.** Black and White people with high job insecurity experience different COVID-related risk perceptions than those with low perceived job insecurity.

3. **Hypothesis III.** The impact that COVID-19 has on wellbeing for essential and non-essential workers could be accounted for by increases in COVID-related risk perceptions.
a. **Hypothesis IIIa.** Organizational protection practices moderate the relationship between COVID-related risk perceptions of essential employees and wellbeing. Specifically, higher reports of protection practices (OSHA guidelines and FSSBs) lessen the impact of COVID-related risk perceptions in essential workers on wellbeing.

Figure 4
*Visual Presentation of Hypothesis 3a*

4. **Hypothesis IV.** COVID-related risk perceptions mediate the relationship between job insecurity and wellbeing.

Figure 5
*Visual Presentation of Hypothesis 4*

a. **Hypothesis IVa.** Higher indications of FSSBs moderate the relationship between job insecurity and COVID-related risk perceptions, which decrease negative wellbeing. Specifically, higher reports of the protection practice, FSSBs, in participants experiencing high job insecurity help to decrease feelings negative wellbeing through decreasing COVID-related risks.
b. **Hypothesis IVb.** Higher reports of OSHA guidelines being followed in the workplace moderate the relationship between risk perceptions of workers experiencing job insecurity and wellbeing. Specifically, the protection practice OSHA buffer the impact of those risk perceptions on wellbeing.

1. **Exploratory Research Question A:** How does SES impact COVID-related risk perceptions of essential workers?

2. **Exploratory Research Question B:** How does SES impact COVID-related risk perceptions of workers with high job insecurity?

3. **Exploratory Research Question C:** How do health risk perceptions mediate the relationships between essential status, perceived job insecurity, and wellbeing differently than financial risk perceptions?
Method

Participants

Working adults, aged 18 years and older, were recruited to take this survey using Prolific. Each individual was compensated $6.50 per hour. The total sample included 393 participants after 44 were dropped due to failing attention checks within the survey. There were 189 Black participants and 204 White participants. Demographics including age ($M = 44.93, SD = 14.6$), socioeconomic status ($M = 2.53, SD = 0.97$), gender (males = 182, females = 211), and more were gathered. While the participants were balanced on many of the demographics, most of these participants were democratic in their political beliefs ($n = 230$). See Table 1 for general demographic characteristics and Table 2 for work demographic characteristics. Two hundred and ninety were working individuals (e.g., working full time, working part time, employed but currently not at work due to temporary illness, vacation, or strike, retired but not working, or other), with 98 being essential workers and 192 being non-essential. Participants were screened to match with the percentages needed for race groups. Participants who did not identify as White or Black were excluded. The materials and protocol were approved by the Institutional Review Board (IRB) prior to data collection. See Appendix H for the informed consent with the IRB approval code and date.
Table 1  
Demographic Characteristics of Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>189</td>
<td>48.1</td>
</tr>
<tr>
<td>White</td>
<td>204</td>
<td>51.9</td>
</tr>
<tr>
<td><strong>SES</strong></td>
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<td></td>
</tr>
<tr>
<td>Lower income</td>
<td>72</td>
<td>18.3</td>
</tr>
<tr>
<td>Lower middle income</td>
<td>100</td>
<td>25.4</td>
</tr>
<tr>
<td>Middle income</td>
<td>164</td>
<td>41.7</td>
</tr>
<tr>
<td>Upper middle income</td>
<td>54</td>
<td>13.7</td>
</tr>
<tr>
<td>Upper income</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>53</td>
<td>13.5</td>
</tr>
<tr>
<td>$20,000 - $35,000</td>
<td>67</td>
<td>17.0</td>
</tr>
<tr>
<td>$35,001 - $50,000</td>
<td>55</td>
<td>14.0</td>
</tr>
<tr>
<td>$50,001 - $75,000</td>
<td>78</td>
<td>19.8</td>
</tr>
<tr>
<td>$75,001 - $100,000</td>
<td>50</td>
<td>12.7</td>
</tr>
<tr>
<td>$100,001 - $150,000</td>
<td>43</td>
<td>10.9</td>
</tr>
<tr>
<td>Greater than $150,000</td>
<td>47</td>
<td>12.0</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>182</td>
<td>46.3</td>
</tr>
<tr>
<td>Female</td>
<td>211</td>
<td>53.7</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>133</td>
<td>33.8</td>
</tr>
<tr>
<td>Married</td>
<td>159</td>
<td>40.5</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>50</td>
<td>12.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>11</td>
<td>2.8</td>
</tr>
<tr>
<td>Partnered/ Cohabitating (unmarried)</td>
<td>38</td>
<td>9.7</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>High school degree or equivalent</td>
<td>46</td>
<td>11.7</td>
</tr>
<tr>
<td>Some college but no degree</td>
<td>71</td>
<td>18.1</td>
</tr>
<tr>
<td>Associate's degree</td>
<td>47</td>
<td>12.0</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>120</td>
<td>30.5</td>
</tr>
<tr>
<td>Master's degree</td>
<td>90</td>
<td>22.9</td>
</tr>
<tr>
<td>Doctorate degree</td>
<td>15</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Political Party</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Republican</td>
<td>67</td>
<td>17.0</td>
</tr>
<tr>
<td>Democrat</td>
<td>230</td>
<td>58.5</td>
</tr>
<tr>
<td>Independent</td>
<td>80</td>
<td>20.4</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Note. The total sample after dropping 44 participants due to failed attention checks was 393. The participants were an average age of 44.93 (SD = 14.6).
Table 2

*Work Demographic Characteristics of Participants*

<table>
<thead>
<tr>
<th>Work Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working full time (30 hours or more per week)</td>
<td>206</td>
<td>52.4</td>
</tr>
<tr>
<td>Working part time (less than 30 hours per week)</td>
<td>52</td>
<td>13.2</td>
</tr>
<tr>
<td>Employed, but currently not at work due to temporary illness, vacation, or strike</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>Unemployed; laid off/furloughed; looking for work</td>
<td>58</td>
<td>14.8</td>
</tr>
<tr>
<td>Retired and not working</td>
<td>45</td>
<td>11.5</td>
</tr>
<tr>
<td>Retired but now working</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Essential Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>98</td>
<td>33.8</td>
</tr>
<tr>
<td>Non-essential</td>
<td>192</td>
<td>66.2</td>
</tr>
<tr>
<td><strong>Work from Home</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>97</td>
<td>33.4</td>
</tr>
<tr>
<td>A little bit</td>
<td>30</td>
<td>10.3</td>
</tr>
<tr>
<td>Somewhat</td>
<td>15</td>
<td>5.2</td>
</tr>
<tr>
<td>Moderately</td>
<td>22</td>
<td>7.6</td>
</tr>
<tr>
<td>Quite a bit</td>
<td>23</td>
<td>7.9</td>
</tr>
<tr>
<td>Very much</td>
<td>26</td>
<td>9.0</td>
</tr>
<tr>
<td>Completely</td>
<td>77</td>
<td>26.6</td>
</tr>
<tr>
<td><strong>Change in Work Hours</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No change</td>
<td>169</td>
<td>58.3</td>
</tr>
<tr>
<td>Increase in hours</td>
<td>40</td>
<td>13.8</td>
</tr>
<tr>
<td>Decrease in hours</td>
<td>81</td>
<td>27.9</td>
</tr>
<tr>
<td><strong>Essential Industry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care / Public Health</td>
<td>29</td>
<td>10.0</td>
</tr>
<tr>
<td>Emergency Services</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Food and Agriculture</td>
<td>11</td>
<td>3.8</td>
</tr>
<tr>
<td>Energy</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Water and Wastewater</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Transportation and Logistics</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td>Communications and Information</td>
<td>25</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Government Operations and other community-based essential functions</strong></td>
<td>13</td>
<td>4.5</td>
</tr>
<tr>
<td>Critical Manufacturing</td>
<td>6</td>
<td>2.1</td>
</tr>
<tr>
<td>Financial Services</td>
<td>33</td>
<td>11.4</td>
</tr>
<tr>
<td>Chemical and Hazardous Materials</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Defense Industrial Base</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Industrial, Commercial, Residential, and Sheltering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities and Services</td>
<td>8</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>155</td>
<td>53.4</td>
</tr>
</tbody>
</table>

*Note. n for employment was 393, n for all other work characteristics was 290. The remaining 103 were not employed*
To determine a sufficient sample size, a Monte-Carlo simulation was run in R. This simulation is based off a 3-way interaction for a project completed on the same grant as the survey this thesis will be a part of. Because the 3-way interaction is more complicated, then a smaller sample size was needed for the most complicated hypothesis in this thesis than found from this simulation. The simulation indicated that 150 people were needed per group to detect a minimum effect size of a Cohen’s d of .15 with 80% power and an alpha level of .05 for the 3-way interaction. To maximize power and account for people who were dropped due to failing attention checks or not matching the inclusion criteria, 400 participants were recruited.

**Design**

The categorical independent variables of interest included race (Black/African American and White) and essential work status (essential versus non-essential employees). The continuous independent variable is job insecurity.

The dependent variables of interest included risk perceptions (both health and financial risks) and wellbeing (perceived stress scale, mental health continuum). The moderating variables were protective practices (OSHA guidelines, and FSSBs).

**Procedure**

This survey was included in a survey distributed through Prolific. This survey is part of the Aging, Emotional Regulation and Stress grant under Dr. Joseph Mikels’ lab: Emotion and Cognition. The questionnaires associated with this thesis were within the wellbeing measures section, the already created demographics section, or towards the end of the survey. The survey took approximately one hour. Participants were compensated through Prolific.
After providing informed consent, participants were first orientated to the survey. General instructions were provided. Next, participants answered two questionnaires that were not included with this thesis. After, they provided their health status and indicated their risk perceptions and vulnerabilities. Next, they completed the wellbeing measures (i.e., PSS and MHC-S) and other measures not included with this thesis. They then completed the demographics section. Next, they completed the adapted JIS. They then completed protective practices questionnaires which included the OSHA guidelines and the FSSB. Finally, participants were thanked and compensated through Prolific.

**Measures**

**COVID-Related Risk Perceptions**

First, to measure health risk, the participants answered whether they have had COVID-19 or were exposed to the virus. Then, participants were asked a 10 Likert-type questions adapted from Young et al. (2020) regarding their risk / vulnerability of getting COVID-19 (e.g., “I am vulnerable to getting the coronavirus”) which are on 7-point scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*). Responses to these questions were averaged across, with higher scores indicating higher health risk perceptions and vulnerabilities ($\alpha = .92$). See Appendix A for the risk questions.

Financial risk was measured with three questions including items such as “It is likely that I will run out of money due to COVID-19.” Participants indicated their response on a 7-point Likert-type scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*) adapted from Bruine de Bruine (2020; $\alpha = .85$). Responses to these questions were averaged, with higher scores indicating higher financial risk perceptions.
To get an overall risk perception score, participants’ overall scores on both the health risk and financial risk questions were averaged and combined ($\alpha = .85$). Higher scores indicated higher overall COVID-related risk perceptions.

**Wellbeing**

Wellbeing was measured with two scales, including the Perceived Stress Scale (PSS) and the Mental Health Continuum – Short Form (MHC-SF).

**Perceived Stress Scale**

Stress was measured using Cohen’s (1994) Perceived Stress Scale (PSS). This scale contains ten items measured with 5-point Likert style scales ($0 = \text{Never}, 4 = \text{Very often}$). See Appendix B for this scale. Four items were reverse coded: items 4, 5, 8, and 9. Responses to these items were averaged, with higher scores indicating greater perceived stress ($\alpha = .92$).

**Mental Health Continuum – Short Form**

The Mental Health Continuum – Short Form (MHC-SF; Keyes, 2009; Keyes et al., 2008) was used to measure emotional wellbeing, social wellbeing, and psychological wellbeing. This scale contains 14 questions asking about the frequency of experiences. See the scale in Appendix C. Three items measured emotional wellbeing, five items measured social wellbeing, and six items measured psychological wellbeing. Responses were made on a 6-point Likert-type scale ($0 = \text{Never}, 5 = \text{Everyday}$). Responses were averaged to create a composite flourishing mental health score ($\alpha = .95$), with higher scores indicating higher levels of flourishing mental health.
Organizational Protective Practices

OSHA Guidelines

The OSHA guidelines questions were created based on “Steps All Employers Can Take to Reduce Workers’ Risk of Exposure to Sars-Cov-2” from the U.S. Department of Labor OSHA’s Guidance on Preparing Workplaces for COVID-19 (2020). Each item was produced from the paragraphs within the above section. Each participant indicated to what extent their place of employment has made an effort to complete each recommendation. Each question was made on a sliding 100-point scale (0 = Not at all, 100 = Extremely). See the items in Appendix D. Each item also included an NA option in case the participant only worked from home. Responses were averaged, with higher scores indicating a greater usage of OSHA guidelines in the workplace (α = .94).

Family Supportive Supervisor Behaviors

The Family Supportive Supervisor Behaviors Scale was created by Hammer et al. (2011). See this scale in Appendix E. This questionnaire contains 14 questions, across four dimensions: Emotional Support, Instrumental Support, Role Modeling Behaviors, and Creative Work-Family management. Responses were made on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The Cronbach’s alpha was calculated for emotional support (α = .94), role modeling behaviors (α = .93), instrumental support (α = .90), and creative work-family management (α = .91). For this thesis, items were averaged to create an overall composite average (α = .97). Higher scores on the questionnaire indicate more FSSBs.
**Job Insecurity**

Job insecurity was measured using questions taken from the Job Insecurity Scale created by Ashford et al. (1989). See Appendix F. The questions used are adapted from their section measuring perceived threat to total job. Responses were made on a 5-point Likert scale (1 = very unlikely, 5 = very likely) determining how likely an event is to occur. Six questions were kept from the original measure (α = .86) including items such as the likelihood to “Lose your job and be laid off for a short while,” and “lose your job by being fired.” Items were averaged to create a total job insecurity score, with higher scores representing higher job insecurity.

**Essential Status**

To measure whether an individual is an essential worker, the California guidelines were referenced (McNicholas & Poydock, 2020). According to the California government, 13 job types are considered essential: Health Care / Public Health, Emergency Services, Food and Agriculture, Energy, Water and Wastewater, Transportation and Logistics, Communications and Information, Government Operations and other community-based essential functions, Critical Manufacturing, Financial Services, Chemical and Hazardous Materials, Defense Industrial Base, Industrial, Commercial, Residential, and Sheltering Facilities and Services and Other. Participants were presented with a drop-down menu asking if their current job falls within one of those 13 categories. In addition, they were asked “Are you currently considered an essential worker?” See Appendix G for the essential status questions.
Results

The data was first cleaned and each categorical variable was placed into its subsequent category (e.g., race and essential status). In addition, the participants who were not Black or White were removed for these analyses. If the participants did not pass the attention checks within the questionnaires from Dr. Mikels’ surveys, they were removed for analyses ($n = 44$). A total of 393 participants passed the attention checks and were used in analyses. Next, descriptive statistics were calculated for the demographics (e.g., race, age, SES, gender) and each scale. For each regression analysis, assumption checks were run, specifically tests for linearity, homogeneity of variance, multicollinearity, and heteroscedasticity. Each model passed these assumptions. Analyses were run in R Studio. See Table 3 for descriptive statistics and correlations for study variables.
Table 3

**Descriptive Statistics and Correlations for Study Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Health Risk Perceptions</td>
<td>393</td>
<td>3.84</td>
<td>1.62</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Financial Risk Perceptions</td>
<td>393</td>
<td>3.22</td>
<td>1.46</td>
<td>0.58***</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. COVID-Related Risk Perceptions</td>
<td>393</td>
<td>3.56</td>
<td>1.38</td>
<td>0.95***</td>
<td>0.79***</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. Perceived Stress</td>
<td>393</td>
<td>1.72</td>
<td>0.58</td>
<td>0.27***</td>
<td>0.38***</td>
<td>0.36***</td>
<td>0.92</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5. Mental Health Continuum</td>
<td>393</td>
<td>2.80</td>
<td>1.19</td>
<td>-0.20***</td>
<td>-0.25***</td>
<td>-0.25***</td>
<td>-0.70***</td>
<td>0.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. FSSB</td>
<td>290</td>
<td>3.62</td>
<td>0.87</td>
<td>-0.19**</td>
<td>-0.07</td>
<td>-0.18**</td>
<td>-0.30***</td>
<td>0.44***</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. OSHA</td>
<td>290</td>
<td>77.80</td>
<td>18.16</td>
<td>-0.12*</td>
<td>-0.04</td>
<td>-0.11</td>
<td>-0.25***</td>
<td>0.33***</td>
<td>0.34***</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Job Insecurity</td>
<td>290</td>
<td>2.10</td>
<td>0.92</td>
<td>0.21***</td>
<td>0.4***</td>
<td>0.31***</td>
<td>0.28***</td>
<td>-0.13*</td>
<td>-0.29***</td>
<td>-0.18*</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Race</td>
<td>393</td>
<td>NA</td>
<td>NA</td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.16**</td>
<td>0.20***</td>
<td>0.08</td>
<td>0.09</td>
<td>0.06</td>
<td>NA</td>
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<td></td>
</tr>
<tr>
<td>10. SES</td>
<td>393</td>
<td>2.53</td>
<td>0.97</td>
<td>-0.2***</td>
<td>-0.17***</td>
<td>-0.22***</td>
<td>-0.18***</td>
<td>0.26***</td>
<td>0.27***</td>
<td>0.00</td>
<td>-0.03</td>
<td>-0.02</td>
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<td></td>
</tr>
<tr>
<td>11. Essential Status</td>
<td>290</td>
<td>NA</td>
<td>NA</td>
<td>0.03</td>
<td>0.05</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
<td>0.05</td>
<td>-0.08</td>
<td>0.02</td>
<td>0.06</td>
<td>0.06</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Note.* Spearman Rho Correlations. ***p < .001. **p < .01. *p < .05. Cronbach's alpha values are along the diagonal. N sizes are smaller for work-related scales as only employed participants answered these measures. Health risk perceptions, financial risk perceptions, COVID-related risk perceptions were on a 7-point scale (1 = Strongly Disagree, 7 = Strongly Agree). The PSS was on a 5-point scale (0 = Never, 4 = Very often)), the MHC was on a 6-point scale (0 = Never, 5 = Everyday). The OSHA scale was on a 100-point scale (0 = Not at all, 100 = Extremely), the FSSB was on a 5-point scale (1 = Strongly disagree, 5 = Strongly agree), and the JIS was on a 5-point scale (1 = very unlikely, 5 = very likely). Race groups included Black and White individuals, SES was on a 5-point scale (1 = Lower Income, 5 = Upper Income), and Essential Status included essential or non-essential.
Hypothesis 1

Hypothesis 1 predicted that essential workers ($n = 98$) would have higher perceptions of COVID-related risks in comparison to non-essential workers ($n = 192$). This was tested by running a t-test. On average, essential workers reported similar risk ($M = 3.58, SE = 1.36$) compared to non-essential workers ($M = 3.45, SE = .1.40$). This difference was not significant, $t(201) = 0.76, p = 0.45$, 95% CI [-.207, .466], with an effect size of $d = 0.09$. In addition, H1a predicted that essential workers who are Black ($n = 53$) would report higher levels of risk perceptions than essential workers who are White ($n = 45$). This was tested via a moderation analysis with essential status as the predictor, general risk perceptions as the outcome and race as the moderator. H1a was not supported as race did not have a moderating effect on the relationship between essential worker status and risk perceptions ($b = 0.06, SE = 0.35, t = 0.18, p = 0.85$) and essential status and race did not explain a significant portion of variance in risk perceptions ($R^2 = -0.01, F(3, 286) = 0.26, p = 0.86$).

Hypothesis 2

It was predicted that higher levels of job insecurity would lead to higher levels of COVID-related risk perceptions. Using a regression analysis, job insecurity was shown to predict general risk perceptions, thus H2 was supported ($b = 0.46, SE = 0.09, t(288) = 5.3, p < 0.01$). Job insecurity also explained a significant proportion of variance in general risk perception scores ($R^2 = .09, F(1, 288) = 28.68, p < .01$), with a small effect size, $f^2 = 0.10$.

A moderation analysis was used to analyze if employees who are Black and White with high job insecurity will experience different COVID-related risk perceptions
than those with low perceived job insecurity (H2a). H2a was not supported as the impact of job insecurity on risk perceptions did not differ between Black and White participants ($b = 0.01, SE = 0.17, t = 0.05, p = 0.96$). Job insecurity and race together explained a significant proportion of variance in general risk perception scores ($R^2 = .08, F(3, 286) = 9.65, p < .01$).

**Hypothesis 3**

Hypothesis 3 predicted that the impact of COVID-19 on wellbeing for essential and non-essential workers could be accounted for by increases in COVID-related risk perceptions. For H3, the data was submitted to a Monte Carlo mediation analysis with 1000 simulations with essential worker status as the predictor, COVID-related risk perceptions as the mediator, and wellbeing as the outcome. Essential worker status (essential = 0, non-essential = 1) did not have a significant indirect effect on perceived stress through COVID-related risk perceptions (indirect effect = -0.02 [-0.07,0.03], $p = 0.44$). Further, essential worker status (essential = 0, non-essential = 1) did not have a significant indirect effect on positive mental health through covid-related risk perceptions (indirect effect = 0.03 [-0.05,0.11], $p = 0.46$). The direct effect of essential worker status on positive mental health was not significant (direct effect = -0.27, [-0.53,0.01], $p = .06$).

These results do not support Hypothesis 3; risk perceptions did not mediate the relationship between being an essential worker and wellbeing. The negative impact that COVID-19 had on perceived stress for essential and non-essential workers was not accounted for by increases in COVID-related risk perceptions.
H3a predicted that organizational protection practices would moderate the relationship between COVID-related risk perceptions of essential employees and wellbeing. Specifically, it was expected that high reports of protection practices (i.e., OSHA guidelines and FSSBs) would lessen the impact of COVID-related risk perceptions in essential workers on wellbeing. To analyze H3a, the data were submitted to SEM moderated mediation analyses using the R package Lavaan. Each model used bootstrapping with 500 simulations drawn. For H3a, essential status was the predictor, risk perception was the mediator, wellbeing (i.e., MHC-S and PSS separately) was the outcome, and protection practices was the moderator of the relationship between the mediator and the outcome. Each protection practice (i.e., OSHA and FSSBs) was categorized into two categorical groups, a high and low group. To calculate these groups, the mean was calculated then anything above the mean was placed in the high group and anything below the mean was placed in the low group. Protection practices did not moderate the relationship between risk perceptions of essential employees and wellbeing. Higher reports of using protection practices (e.g., following OSHA guidelines and

<p>| Table 4 |
|---------------------------------|----------|------|--------|
| <strong>Regression Analysis for Mediation of COVID-Related Risk Perceptions between Essential Worker Status and Wellbeing</strong> |</p>
<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>95% CI</th>
<th>p</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H3: PSS as outcome</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Effect</td>
<td>-0.02</td>
<td>[-0.07, 0.03]</td>
<td>0.44</td>
<td>0.00</td>
</tr>
<tr>
<td>Direct Effect</td>
<td>-0.04</td>
<td>[-0.17, 0.09]</td>
<td>0.58</td>
<td>0.12</td>
</tr>
<tr>
<td>Total Effect</td>
<td>-0.06</td>
<td>[-0.20, 0.07]</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Proportion Mediated</td>
<td>0.33</td>
<td>[-2.73, 3.39]</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td><strong>H3: MHC as outcome</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Effect</td>
<td>0.03</td>
<td>[-0.05, 0.11]</td>
<td>0.46</td>
<td>0.00</td>
</tr>
<tr>
<td>Direct Effect</td>
<td>-0.27</td>
<td>[-0.53, 0.01]</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Total Effect</td>
<td>-0.24</td>
<td>[-0.51, 0.05]</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Proportion Mediated</td>
<td>-0.09</td>
<td>[-1.79, 1.14]</td>
<td>0.55</td>
<td></td>
</tr>
</tbody>
</table>
FSSBs) did not buffer the impact of increased risk perceptions in essential workers on wellbeing. Specifically, higher reports of OSHA practices did not impact the mediated relationship between essential worker status, perceived risk, and perceived stress (indirect effect of low OSHA scores = -0.03, SE = 0.03, z = -1.01, p = 0.32; indirect effect of high OSHA scores = -0.03, SE = 0.02, z = -1.18, p = 0.24). Higher reports of OSHA practices also did not impact the mediated relationship between essential worker status, perceived risk, and positive mental health (indirect effect of low OSHA scores = -0.03, SE = 0.04, z = 0.75, p = 0.45; indirect effect of high OSHA scores = 0.04, SE = 0.04, z = 1.14, p = 0.25).

FSSBs also did not impact the mediated relationship between essential worker status, perceived risk, and perceived stress (indirect effect of low FSSB scores = -0.02, SE = 0.03, z = -0.73, p = 0.46; indirect effect of high FSSB scores = -0.02, SE = 0.02, z = -0.72, p = 0.47). Finally, FSSBs did not impact the mediated relationship between essential worker status, perceived risk, and positive mental health (indirect effect of low FSSB scores = 0.02, SE = 0.03, z = 0.69, p = 0.49; indirect effect of high FSSB scores = 0.02, SE = 0.03, z = 0.70, p = 0.48). While FSSBs did not moderate this relationship, they did have a significant direct effect on flourishing mental health. However, when this relationship was probed to look for a main effect of FSSBs, this was not significant in a generalized linear model with essential status, general risk perceptions, and FSSBs predicting MHC scores. Hypothesis 3a was not supported.
Hypothesis 4 states that COVID-related risk perceptions mediate the relationship between job insecurity and wellbeing. H4 was submitted to a Monte Carlo mediation analysis with job insecurity as the predictor, COVID-related risk perceptions as the mediator, and wellbeing as the outcome. The direct effect of job insecurity on perceived stress was mediated by perceived risk (direct effect = 0.10, [0.03, 0.17], $p = 0.004$; indirect effect = 0.06, [0.03, 0.09]; proportion mediated = 0.36, [0.18, 0.67], $p < 0.01$). Further, the impact of job insecurity on positive mental health was mediated by general
risk perception (direct effect = -0.06, [-0.23, 0.10], \( p = 0.43 \); indirect effect = -0.09, [-0.15, -0.04], \( p < 0.01 \); proportion mediated = 0.59 [-0.89, 4.71], \( p = 0.06 \)). These results show support for Hypothesis 4, perceived risk mediates the relationship between job insecurity and wellbeing.

Further, H4a predicted high indications of FSSBs moderate the relationship between job insecurity and COVID-related risk perceptions, which decreases negative wellbeing. Further, high reports of the protection practice (FSSBs) in participants experiencing high job insecurity was expected to decrease negative wellbeing through decreasing COVID-related risks. To analyze H4a, the data were submitted to SEM moderated mediation analyses using the R package Lavaan. The model used bootstrapping with 500 samples drawn. Job insecurity was the predictor, risk perception was the mediator, wellbeing was the outcome, and the high and low categories of protection practice (FSSBs) was the moderator of the relationship between the predictor and the mediator. FSSBs did not moderate the relationship between risk perceptions of workers with higher job insecurity and perceived stress (indirect effect of low FSSB =
0.03, $SE = 0.02$, $z = 1.98$, $p = 0.05$; indirect effect of high FSSB = -0.03, $SE = 0.04$, $z = -0.63$, $p = 0.53$; index of moderated mediation = 0.03, $SE = 0.02$, $z = 1.55$, $p = 0.12$). For risk perceptions, $R^2 = 0.10$, and for perceived stress, $R^2 = 0.18$, corresponding with medium effect sizes. Additionally, FSSBs did not moderate the relationship between risk perceptions of workers with higher job insecurity and positive mental health (indirect effect of low FSSB = -0.05, $SE = 0.03$, $z = -1.73$, $p = 0.08$; indirect effect of high FSSB = 0.04, $SE = 0.06$, $z = 0.63$, $p = 0.53$; index of moderated mediation = -0.05, $SE = 0.03$, $z = -1.25$, $p = 0.178$). For risk perceptions, $R^2 = 0.10$, and for perceived stress, $R^2 = 0.19$, corresponding with medium effect sizes. H4a was not supported. However, there was a positive direct effect of FSSBs on mental health (direct effect = 1.28, $SE = 0.30$, $z = 4.26$, $p < 0.000$) and on perceived stress (direct effect = -0.32, $SE = 0.13$, $z = -2.29$, $p = 0.02$). For both perceived stress ($b = -0.46$, $SE = 0.15$, $z = -3.06$, $p < 0.01$) and positive mental health ($b = 1.36$, $SE = 0.34$, $z = 4.00$, $p < 0.01$), FSSBs directly predicted wellbeing.

To probe this relationship, a generalized linear model was run with wellbeing as the outcome (i.e., PSS and MHC separately, risk perceptions, job insecurity, and protection practices (i.e., OSHA and FSSB separately) as the predictors to check for a main effect of FSSBs on wellbeing. FSSBs did predict flourishing mental health ($b = 1.88$, $SE = 0.91$, $t (282) = 2.05$, $p < 0.05$) but not perceived stress ($b = -0.57$, $SE = 0.44$, $t (282) = -1.32$, $p = 0.19$).
H4b predicted that high reports of OSHA guidelines being followed in the workplace will moderate the relationship between risk perceptions of workers experiencing job insecurity and wellbeing. Specifically, the OSHA practices were expected to buffer the impact of those risk perceptions on wellbeing. To analyze H4b, the data were submitted to SEM moderated mediation analyses using the R package Lavaan. The model used bootstrapping with 500 samples drawn. Job insecurity was the predictor, risk perception was the mediator, wellbeing was the outcome, and the high and low categories of the protection practice (OSHA guidelines) was the moderator of the relationship between the mediator and the outcome. The mediated relationship between job insecurity, risk perceptions, and wellbeing was not significantly moderated by differences in reports of following OSHA guidelines. High reports of the protection

<table>
<thead>
<tr>
<th>Estimate</th>
<th>95% CI</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0.03</td>
<td>[0.00, 0.07]</td>
<td>0.05</td>
</tr>
<tr>
<td>Low</td>
<td>0.02</td>
<td>[-0.11, 0.11]</td>
<td>0.74</td>
</tr>
<tr>
<td>High</td>
<td>-0.03</td>
<td>[-0.13, 0.04]</td>
<td>0.52</td>
</tr>
<tr>
<td>High</td>
<td>-0.32</td>
<td>[-0.59, -0.06]</td>
<td>0.02</td>
</tr>
<tr>
<td>Index of Moderated Mediation</td>
<td>0.03</td>
<td>[-0.00, 0.09]</td>
<td>0.14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimate</th>
<th>95% CI</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>-0.05</td>
<td>[-0.10, 0.00]</td>
<td>0.08</td>
</tr>
<tr>
<td>Low</td>
<td>0.15</td>
<td>[-0.13, 0.40]</td>
<td>0.25</td>
</tr>
<tr>
<td>High</td>
<td>0.04</td>
<td>[-0.08, 0.17]</td>
<td>0.53</td>
</tr>
<tr>
<td>High</td>
<td>1.28</td>
<td>[0.71, 1.94]</td>
<td>0.00</td>
</tr>
<tr>
<td>Index of Moderated Mediation</td>
<td>-0.05</td>
<td>[-0.13, 0.01]</td>
<td>0.17</td>
</tr>
</tbody>
</table>
practice, OSHA guidelines, did not buffer the impact of risk perceptions in workers with higher scores on perceived job insecurity on wellbeing (index of moderated mediation = -0.002, SE = 0.03, z = -0.05, p = 0.96). Hypothesis 4b was not supported.

Research Questions

Research Question 1. RQ1 aimed to understand whether socioeconomic status (SES) impacted COVID-related risk perceptions in essential workers. This research question was tested using a moderation analysis. There was no relationship between SES and essential worker status and risk perceptions (b = -0.30, SE = 0.19, t = -1.58, p = 0.11) however, essential status and SES did explain a significant proportion of variance in risk perceptions. $R^2 = 0.04$, F(3, 286) = 4.70, $p < 0.01$.

Research Question 2. RQ2 aimed to understand whether SES impacted COVID-related risk perceptions in workers with high levels of job insecurity. This research question was tested using a moderation analysis. There was a main effect of SES in the
relationship between job insecurity and risk perceptions \( (b = -0.60, SE = 0.20, t = -2.9, p = 0.004) \). Further, the moderating effect of SES was not significant \( (b = 0.15, SE = 0.08, t = 1.80, p = 0.07) \). Job insecurity and SES did explain a significant proportion of variance in risk perceptions \( (R^2 = 0.12, F(3, 286) = 14.45, p < 0.01) \). Thus, support was not found for RQ2, SES did not moderate the relationship between job insecurity and risk perceptions, however, SES did predict risk perceptions. Lower levels of SES predicted higher levels of risk perceptions.

**Research Question 3.** RQ3 evaluated how health risk perceptions mediate the relationships between essential status, perceived job insecurity, and wellbeing differently than financial risk perceptions. When aggregated, general COVID-related risks do mediate the relationship between job insecurity and wellbeing, therefore it is important to understand if the health or financial portion of the risk measure differentially impact the relationship. To analyze this research question, a SEM analysis was used with job insecurity as the predictor, health and financial risk perceptions as the mediators, and wellbeing (e.g., perceived stress and positive mental health) as the outcome. Health risks (indirect effect = 0.02, [-0.02, 0.08], \( p = 0.47 \)) and financial risks (indirect effect = 0.06, [-0.02, 0.15], \( p =0.18 \)) did not mediate the relationships between perceived job insecurity and perceived stress. For health risk perceptions, \( R^2 = 0.04 \), and for financial risk perceptions, \( R^2 = 0.16 \). Further, health risks (indirect effect = -0.07, [-0.21, 0.02], \( p = 0.24 \)) and financial risks (indirect effect = -0.13, [-0.34, 0.11], \( p = 0.25 \)) did not mediate the relationships between perceived job insecurity and positive mental health. For health risk perceptions, \( R^2 = 0.04 \), and for financial risk perceptions, \( R^2 = 0.16 \). There was no support found for differential mediations in RQ3. Health risk perceptions and financial
risk perceptions do not independently mediate or differentially mediate the relationship between job insecurity and wellbeing.

To analyze this whether health and financial risk perceptions mediate or differentially mediate the relationship between essential status and wellbeing, a SEM analysis was used with essential status as the predictor, health and financial risk perceptions as the mediators, and wellbeing (e.g., perceived stress and positive mental health) as the outcome. Health risks (indirect effect = -0.00, [-0.3, 0.02], \( p = 0.94 \)) and financial risks (indirect effect = 0.02, [-0.08,0.02], \( p =0.50 \)) did not mediate the relationships between perceived essential status and perceived stress. For health risk perceptions and financial risk perceptions, \( R^2 = 0.00 \). Further, health risks (indirect effect = 0.00, [-0.03, 0.09], \( p = 0.81 \)) and financial risks (indirect effect = 0.00, [-0.02, 0.11], \( p = 0.81 \)) did not mediate the relationships between perceived essential status and positive mental health. For health risk perceptions and financial risk perceptions, \( R^2 = 0.00 \). There was no support found for mediation or differential mediations in RQ3. Health risk perceptions and financial risk perceptions do not differentially mediate the relationship between essential status and wellbeing.

**Post Hoc Analyses**

To measure the relationships between the predictor and mediator variables, a MANOVA and regressions were run. First, a MANOVA was run to look for differences in essential workers’ health (\( M = 3.79 \)), financial (\( M = 3.30 \)), and general risk (\( M = 3.58 \)) perceptions and non-essential workers’ health (\( M = 3.72 \)), financial (\( M = 3.15 \)), and general risk (\( M = 3.45 \)) perceptions. A statistically insignificant MANOVA effect was obtained, Pillais’ Trace = .02, F(3, 286) = 1.75, \( p = 0.15 \). The effect size was .02, which
implies that only 2% of the variance in risk perceptions were accounted for by essential status.

Finally, regression models were run to understand the relationships between essential status and job insecurity. First a linear regression was run to detect if essential status predicted job insecurity levels. Essential status did not predict job insecurity ($b = -0.07, SE = 0.11, t(288) = -0.58, p = 0.57$). Lastly, a binomial logistic regression model was run to analyze whether job insecurity predicted the likelihood to be an essential or non-essential workers. The relationship between job insecurity and essential status was insignificant ($b = -0.08, SE = 0.14, z(288) = -0.58, p = 0.56$). Those with higher job insecurity are 7.51% less likely to be an essential worker than those with lower job insecurity.

**Discussion**

This thesis aimed to understand how COVID-related risk perceptions and wellbeing differed by essential status, job insecurity levels, and race. Further, it aimed to examine whether there are protection practices such as following the OSHA guidelines or using FSSBs that could help buffer against the risk perceptions due to COVID-19 on someone’s wellbeing. General COVID-related risk perceptions of essential workers and non-essential workers were not found to differ. Further, Black and White essential workers and non-essential workers did not report differences in COVID-related risks.

Participants with higher job insecurity reported higher levels of COVID-related risk perceptions. However, the impact of job insecurity on risk perceptions did not differ between Black and White people. COVID-related risk perceptions did not mediate essential vs. non-essential worker perceived stress or positive mental health, however
there was a direct effect of risk perception on positive mental health. Further, OSHA compliance did not moderate the relationship between essential worker status and risk perceptions and stress or mental health. While OSHA compliance did not impact mental health, the mediated relationship between essential worker status, general risk perceptions, and wellbeing was also not moderated by levels of FSSBs. However, more FSSBs were predictive of higher positive mental health. If employers implement more FSSBs, they may see more positive mental health within their employees.

COVID-related risk perceptions partially mediated the relationship between job insecurity and perceived stress. COVID-related risk perceptions also mediated the relationship between job security and positive mental health and to a greater extent than perceived stress. While job insecurity has been found to be related to increased psychological distress during the pandemic (Wilson et al., 2020), employees experiencing job insecurity may experience more of an impact on their wellbeing when they are perceiving more COVID-related risks. FSSBs did not increase or decrease the impact of job insecurity on risk perceptions in the mediated relationship between job insecurity, risk perceptions, and perceived stress or positive mental health. However, FSSBs did directly predict lower levels of perceived stress and higher levels of positive mental health. OSHA compliance scores did not buffer the impact of risk perceptions on wellbeing outcomes and are not considered a protective practice for employee wellbeing. To probe the mediation analyses further exploration was conducted on the COVID-related risk perceptions to understand whether there were individual impacts of health risks in comparison financial risks. The exploratory mediation models showed that health
and financial risks did not differentially mediate the relationship between job insecurity and stress or positive mental health.

Finally, further analyses were conducted using SES as a predictor beyond race due to the differential impact that those of low SES have experienced during COVID-19. Compared to essential workers, non-essential workers had similar risk perception levels, regardless of SES. Participants with different job insecurity levels did not experience different risk perceptions based on their SES levels, however, lower SES did directly predict higher risk perceptions.

**Implications**

Based on the findings in this thesis, it is likely that many employees were experiencing similar levels of risk perceptions regardless of essential status or race group. It is possible that splitting up employees by essential and non-essential status was not sufficient to detect differences in risk levels as not all essential employees are customer-facing. In addition, although there were no differences in risk perceptions among Black or White participants, it is important to understand the risk associated with COVID-19 as it has led to mortality and long-term health problems. Feelings of risk can be high in any community as many communities have been impacted by COVID. It is also important to acknowledge that communities may feel different types of risk, thus asking about perceptions of risk creating by White researchers may have narrowed the types of risk that individuals in different communities have faced. Regardless, COVID-19 has led to mortalities, health problems and job loss in many different communities (U.S. Bureau of Labor Statistics, 2020; Gould et al., 2020).
While essential status did not impact risk perceptions, feeling as though you may be at risk to lose your job did impact perceptions of covid-related risk. Because of this, employers may find it beneficial to be transparent about the state of the workplace, especially if the employees are not at risk of job loss, so their employees may feel more at ease. Research has shown that stable employment alleviates risk beyond just providing finances (Kniffin et al., 2020) such as healthcare. By allowing employees to understand the state of their job, some of these perceived risks may decrease.

Finally, while following OSHA guidelines and implementing FSSBs did not buffer against the effects of risk perceptions on wellbeing, higher FSSBs were beneficial for flourishing mental health. If employers want to enhance the mental health of their employees, they may look into implementing or improving aspects of FSSBs such as flexibility and work life balance. Because of COVID, the need for FSSBs or supporting the lives of employees external to work, may be especially high as workers need to be able to stay home when sick, take care of family members, and more.

Limitations

This data were gathered during Spring of 2021, after COVID-19 had already been around for over one year. This may have impacted the survey answers that were gathered as mandated closing of businesses was no longer as prevalent. One impact that the timing of this survey may have had is on job insecurity and perceptions of financial- and health-related risks. Because businesses were open during the time of this survey, people may have felt more financially secure because they could be back at work or work from home. In addition, participants may have not felt as many health risks because COVID had already been rampant for one year.
Next, the method by which the data were gathered may be a limitation. The data were gathered via Prolific and attached to another survey, limiting the number of essential workers that were included. Because the original survey’s aim was to understand race and age differences for another study, essential status and employment were not screened for when gathering the participants. Some of the demographics also showed some skewness, for example, most of the participants were democratic which could have impacted the variance in risk perceived. Further, while we asked the types of industries that essential workers were in, we are unaware of how often they work with the public or colleagues which may impact their exposure to COVID. Future research may aim to split up employees by those who consider themselves frontline workers to gain a more comprehensive understanding of the risks faced by those who directly work with the public.

This study did not find differences in risk perceptions between essential and non-essential workers or those with differing levels of job insecurity from different races (i.e., Black and White). It is possible that trying to discern experiences between two communities may not be impactful, especially when COVID has impacted every community, even if there are different numbers of deaths and cases per community. Further, because the researchers on this project were White, it is possible that the risk perceptions they included in the survey were biased towards risks that White individuals may be feeling. It may be more important to dive deeper into the experiences of specific communities using qualitative analyses to gain a more comprehensive understanding of the unique experiences.
Next, monomethod bias and restriction of range may have also impacted this study. Each variable was only measured with a single measure, limiting the ability to state that the variable was actually being measured correctly. In addition, specific variables were highly correlated. For example, the perceived stress scale and the mental health continuum were correlated at $r = -0.70$, and health risk perceptions scale was correlated with financial risk perceptions scale ($r = 0.58$). While the perceived health risk and perceived financial risks were aggregated to form the general COVID-related risk measure, the mental health continuum and perceived stress scale were used separately. See Table 3 for all correlations. Further, multiple variables had skewed data. Financial risk perceptions and job insecurity scale responses were negatively skewed, with most participants selecting the lower response options. Data that were positively skewed included the OSHA scale responses and the FSSB responses; few participants selected lower values for these two scales. Because these data were skewed, differences and effects may not have been found in the analyses. While the raw data was skewed, each model was tested for heteroscedasticity and the residuals were close to normally distributed.

Finally, the two measures for workplace protective practices could be improved. First, job insecurity was measured with only part of the survey designed by Ashford et al. (1989), therefore the results gathered may have not been as thorough or gathered as much of an understanding of each participant’s job insecurity. Lastly, the OSHA guidelines measure was created for this research, therefore it may not have been as comprehensive or tested as well due to the lack of research on COVID-related guidelines in 2020 and 2021.
Future Research

While this research did have limitations, it is necessary to continue the research on the impacts that COVID-19 has had on the workplace. Due to the changes that have taken place, such as an increase in working from home, mask use, and more, future research could clarify the impact that COVID-19 has had on employees. Specifically, there may be differences in the experiences of workers who are essential versus non-essential that were not discussed in this study, especially of essential workers who were not able to work from home. Additionally, there may be other protection practices that workplaces have implemented that have more of an impact on worker wellbeing than following OSHA guidelines or using FSSBs. Researchers should gather more information on what employees have found effective while working throughout the pandemic and aim to gain insight on whether these buffered the negative impacts of COVID-19. Specifically, it may be useful to adjust the OSHA guidelines measure based on qualitative feedback from employees about which practices were impactful in order to gain a better understanding about OSHA guidelines.

Due to the differential impact that COVID has had on Black communities, it may be important to look further into the impacts that COVID has had on communities of color. It may be necessary to dive deeper into the impacts of COVID on these communities specifically rather than trying to compare across different races. Each community has been impacted by COVID, therefore the risks associated with COVID may be high regardless of community, however the types of risk could be different. A qualitative study may be useful to gain comprehensive insight into what types of risk individuals have felt throughout the duration of COVID. More research is also needed to
understand how workplaces can support their employees and ensure that they are getting access to necessary resources related to physical health, mental health, finances, and more. For example, researchers could measure how impactful coworker support is in comparison to supervisor support, or how providing healthcare such as vaccines and/or insurance has impacted employees during COVID.
References


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https://doi.org/10.1377/hlthaff.2020.00897


Accessed 25 September 2020. Available at


Appendix A

COVID-19 Related Questions / Risk Perceptions

Bruine de Bruin (2020) & Young et al., (2020)

Instructions: Please read each statement and indicate the extent to which you agree or disagree with the following statements.

Use the following scale to make your ratings:

1 = Strongly disagree
2 = Disagree
3 = Slightly disagree
4 = Neither agree nor disagree
5 = Slightly agree
6 = Agree
7 = Strongly agree

Health Risk Perceptions (Young et al., under review)
1. I am vulnerable to getting the coronavirus.
2. If I get the virus, I am vulnerable to getting very sick from it.
3. The idea of getting COVID-19 from my friends and family worries me.
4. I feel that my risk for contracting COVID-19 is high.
5. If I were to contract COVID-19, I feel I would be at risk for developing severe symptoms.
6. If I become infected with COVID-19, I could die.
7. I am afraid of being infected by COVID-19.

Financial Risk Perceptions (adapted from Bruine de Bruin, 2020)
1. I am afraid that I will lose my job because of COVID-19.
2. It is likely that I will run out of money due to COVID-19.
3. I feel like I will not be able to pay my bills because of COVID-19.
Appendix B

Perceived Stress Scale (PSS)

Cohen, Kamarck, & Mermelstein, (1983)

Use the following scale to make your ratings:

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<table>
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<tbody>
<tr>
<td>0</td>
<td>Never</td>
</tr>
<tr>
<td>1</td>
<td>Almost never</td>
</tr>
<tr>
<td>2</td>
<td>Sometimes</td>
</tr>
<tr>
<td>3</td>
<td>Fairly often</td>
</tr>
<tr>
<td>4</td>
<td>Very often</td>
</tr>
</tbody>
</table>

1. During the past week, how often have you been upset because of something that happened unexpectedly?
2. During the past week, how often have you felt that you were unable to control the important things in your life?
3. During the past week, how often have you felt nervous and “stressed”?
4. During the past week, how often have you felt confident about your ability to handle your personal problems?*
5. During the past week, how often have you felt that things were going your way?*
6. During the past week, how often have you found that you could not cope with all the things you had to do?
7. During the past week, how often have you been able to control the irritations in your life?
8. During the past week, how often have you felt that you were on top of things?*
9. During the past week, how often have you been angered because of things that were outside your control?*
10. During the past week, how often have you felt difficulties were piling up so high that you could not overcome them?

Note. Asterisks indicate items that are reverse coded. Responses to each item are averaged to create one composite average, with higher scores indicating greater perceived stress.
Appendix C

Mental Health Continuum – Short Form (MHC-SF)

Keyes (2009)

Instructions: Please answer the following questions about how you have been feeling during the past week.

Use the following 0 to 5 scale to make your ratings:

- **0 = Never**
- **1 = Once or twice**
- **2 = About once a week**
- **3 = About 2 or 3 times a week**
- **4 = Almost everyday**
- **5 = Everyday**

1. During the past week, how often did you feel happy?
2. During the past week, how often did you feel interested in life?
3. During the past week, how often did you feel satisfied?
4. During the past week, how often did you feel that you had something to contribute to society?
5. During the past week, how often did you feel that you belonged to a community/social group?
6. During the past week, how often did you feel that our society is becoming a better place for people?
7. During the past week, how often did you feel that people are basically good?
8. During the past week, how often did you feel that the way our society works makes sense to you?
9. During the past week, how often did you feel that you liked most parts of your personality?
10. During the past week, how often did you feel good at managing the responsibilities of your daily life?
11. During the past week, how often did you feel that you had warm and trusting relationships with others?
12. During the past week, how often did you feel that you have experiences that challenge you to grow and become a better person?
13. During the past week, how often did you feel confident to think or express your own ideas and opinions?
14. During the past week, how often did you feel that your life has a sense of direction or meaning to it?

Note. Responses to these items are averaged, with higher scores indicating greater flourishing mental health.
Appendix D

OSHA Guidelines

United States, Department of Labor, Occupational Safety and Health Administration. (2020a).

Instructions: In response to the COVID-19 pandemic, OSHA has recommended actions for each workplace to enhance the safety and wellbeing of its employees. Please use the slider to mark to what extent your place of employment has or is completing each item.

(All items include an NA option)

Developed a response plan to handle the challenges from the virus
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Promotes hygiene through handwashing
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Encourages staying at home if sick
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Encourages respiratory etiquette such as covering sneezes and coughs
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Provides items such as tissues for respiratory etiquette
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Allows for flexible worksites such as working from home
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Allows for flexible work hours
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Engages in routine cleanings of the work environment
0 = Not at all
100 = Completely
[ ------------------------------------------O-----------------------------------]

Has flexible sick leave policies
0 = Not at all
100 = Completely
Provides EPA approved disinfectants
0 = Not at all 100 = Completely
Encourages hygienic workspaces
0 = Not at all 100 = Completely
Promptly identifies those with possible infection
0 = Not at all 100 = Completely
Isolates potentially infected individuals quickly
0 = Not at all 100 = Completely
Encourages self-monitoring to be aware of possible symptoms
0 = Not at all 100 = Completely
Provides face masks
0 = Not at all 100 = Completely
Requires wearing face masks
0 = Not at all 100 = Completely
Restricts personnel in buildings
0 = Not at all 100 = Completely
Provides information about insurance and medical resources
0 = Not at all 100 = Completely
Provides information about COVID-19
0 = Not at all 100 = Completely
Provides information about the COVID-19 vaccines
0 = Not at all 100 = Completely
Please use the slider to mark to what extent you agree with the following statement.

My workplace is effective at minimizing COVID-19 risks.

0 = Not at all

100 = Completely

[ ----------------------------------------------O-----------------------------------------------]
Appendix E

Family Supportive Supervisor Behaviors

Hammer et al. (2009)

Instructions: Please read each statement and indicate how much you agree with each statement. Please refer to your current place of work. If you have more than one job please refer to the job at which you work the most hours.

Use the following scale to make your ratings:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

1. My supervisor is willing to listen to my problems in juggling work and nonwork life.
2. My supervisor takes the time to learn about my personal needs.
3. My supervisor makes me feel comfortable talking to him or her about my conflicts between work and nonwork.
4. My supervisor and I can talk effectively to solve conflicts between work and nonwork issues.
5. I can depend on my supervisor to help me with scheduling conflicts if I need it.
6. I can rely on my supervisor to make sure my work responsibilities are handled when I have unanticipated nonwork demands.
7. My supervisor works effectively with workers to creatively solve conflicts between work and nonwork.
8. My supervisor is a good role model for work and nonwork balance.
9. My supervisor demonstrates effective behaviors in how to juggle work and nonwork balance.
10. My supervisor demonstrates how a person can jointly be successful on and off the job.
11. My supervisor thinks about how the work in my department can be organized to jointly benefit employees and the company.
12. My supervisor asks for suggestions to make it easier for employees to balance work and nonwork demands.
13. My supervisor is creative in reallocating job duties to help my department work better as a team.
14. My supervisor is able to manage the department as a whole team to enable everyone’s needs to be met.

Four Dimensions:
1. Emotional Support (1-4)
2. Instrumental Support (5-7)
3. Role Modeling Behaviors (8-10)
4. Creative Work-Family Management (11-14)
Appendix F

Job Insecurity Scale – Threat to Total Job (Modified)

Ashford, Lee, & Bobko, 1989

Instructions: Thinking about the future, state how likely it is for the following events to occur in your current job(s).

Use the following scale to make your ratings:

1. Very unlikely
2. Unlikely
3. Neither likely nor unlikely
4. Likely
5. Very likely

1. The number of work hours the company can offer you to work may fluctuate from day to day?
2. You may be laid off for a short while?
3. You may be laid off permanently?
4. Your department or division’s future may be uncertain?
5. You may be fired?
6. You may be pressured to accept early retirement?

Cronbach’s Alpha (for all 10 questions from original version) = .75
Appendix G

Demographics

Birthdate: __________________________ (MM/DD/YYYY)

Sex: M / F / Prefer Not to Answer (circle one)

What is your marital status? (please circle one)
1. Single
2. Married
3. Divorced/Separated
4. Widowed
5. Partnered/Cohabiting (unmarried)
6. Other, please specify: ________________________

What best describes your ethnic category? (please circle one)
1. Hispanic or Latino
2. Not Hispanic or Latino

What best describes your race? (please circle one)
1. White or Caucasian
2. Black or African American
3. American Indian, Alaska Native
4. Asian
5. Native Hawaiian or Other Pacific Islander
6. Other, please specify: ________________________

Please circle the number that corresponds to your current socioeconomic level:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Lower</td>
<td>Lower</td>
<td>Middle</td>
<td>Upper</td>
</tr>
<tr>
<td>Upper Income</td>
<td>Middle Income</td>
<td>Income</td>
<td>Middle Income</td>
</tr>
</tbody>
</table>

What is your family’s/year annual household income (before taxes)?
1. Less than $20,000
2. $20,001 - $35,000
3. $35,001 - $50,000
4. $50,001 - $75,000
5. $75,001 - $100,000
6. $100,001 - $150,000
7. Greater than $150,000
How many years of education have you completed (e.g., high school = 12 years; bachelor’s degree = 16 years; master’s degree = 18 years)? ______________

What is your highest completed level of education? (please circle one)
1. Less than high school
2. High school degree or equivalent
3. Some college but no degree
4. Associate’s Degree
5. Bachelor’s Degree (e.g., BA, BS, AB)
6. Master’s Degree (e.g., MA, MS, MBA, MSW, MEng, MED)
7. Doctorate Degree (e.g., PhD, EdD, M.D., J.D.)

Which political party do you associate with?
1. Republican
2. Democratic
3. Independent
4. Other, please specify: ______________________

What is your current employment status?
1. Working full time (30 hours or more per week)
2. Working part time (less than 30 hours per week)
3. Employed, but currently not at work due to temporary illness, vacation, or strike
4. Unemployed; laid off; looking for work
5. Retired and not working
6. Retired, but now working
7. Other, please specify: ______________________

[If Working full time (30 hours or more per week), Working part time (less than 30 hours per week), Employed, but currently not at work due to temporary illness, vacation, or strike, or Retired, but now working is selected, the next three questions will be displayed]

Are you considered an essential worker? (Yes/No)

Which of these industries does your job fall within?
1. Health Care / Public Health
2. Emergency Services
3. Food and Agriculture
4. Energy
5. Water and Wastewater
6. Transportation and Logistics
7. Communications and Information
8. Government Operations and other community-based essential functions
9. Critical Manufacturing
10. Financial Services
11. Chemical and Hazardous Materials
12. Defense Industrial Base
13. Industrial, Commercial, Residential, and Sheltering Facilities and Services
14. Other

Please indicate how your scheduled work hours have changed since the start of the pandemic
1. No Change
2. Increase in hours
3. Decrease in hours

To what extent do you work from home or a remote location?
1 2 3 4 5 6 7
Never A little bit Somewhat Moderately Quite a bit Very much Completely

Vaccine Questions

Have you received a COVID-19 vaccine?
1. Yes
2. No, and I do not have an appointment scheduled
3. No, but I do have an appointment scheduled

To what extent have you experienced barriers in the COVID-19 vaccination process (e.g., finding an appointment, no internet access, long travel time, no transportation available, getting time off from work)?
1 2 3 4 5 6 7
Not at all A little bit Somewhat Moderately Quite a bit Very much Completely

To what extent do you feel you need the vaccine for the benefit of others?
1 2 3 4 5 6 7
Not at all A little bit Somewhat Moderately Quite a bit Very much Extremely

[If Working full time (30 hours or more per week), Working part time (less than 30 hours per week), Employed, but currently not at work due to temporary illness, vacation, or strike, or Retired, but now working is selected, the next three questions will be displayed]

Does your employer provide vaccines to its employees?
1. Yes
2. No
3. Not Sure

[If “Yes” or “No, but I do have an appointment scheduled” is selected, the next questions are displayed]
[If “No, and I do not have an appointment scheduled” is selected, then skip to “If you have not received a vaccine, do you intend to?”]

Since you received the vaccine, to what extent do you consider yourself protected from COVID-19?

1 2 3 4 5 6 7
Not at all A little bit Somewhat Moderately Quite a bit Very much Completely

To what extent do you believe that you need to follow COVID-19 protection practices (e.g., wearing your mask, social distancing) since you have received your vaccine?

1 2 3 4 5 6 7
Not at all A little bit Somewhat Moderately Quite a bit Very much Extremely

If you have not received a vaccine, do you intend to?

1. Yes
2. No
3. Not Sure
Appendix H

Informed Consent

ADULT CONSENT TO PARTICIPATE IN RESEARCH

Aging, Emotion Regulation, and Stress

Principal Investigator: Joseph Mikels, Ph.D.

Institution: DePaul University, Chicago, Illinois, USA

Department (School, College): Psychology

Collaborators: Christian Waugh, PhD-Wake Forest University, Claudia Haase, PhD-Northwestern University, Susan Charles, PhD-University of California Irvine

Key Information:

What is the purpose of this research?
We are asking you to be in a research study because we are trying to learn more about how stress and emotional processes change across the adult life span. This study is being conducted by Professor Joseph Mikels at DePaul University. There may be other people on the research team assisting with the study.

We hope to include about 500 people in this portion of the research and 3800 total in the research overall.

Why are you being asked to be in the research?
You are invited to participate in this study because you are an adult over the age of 18 years old. You were selected as a possible participant and as a random representative from your community from Prolific. You must be age 18 or older to be in this study. This study is not approved for the enrollment of people under the age of 18.

What is involved in being in the research study?
If you agree to be in this study, being in the research involves completing a computer task through Prolific. You will be asked to complete several survey tasks and questionnaires. The survey will include mostly multiple-choice questions, with some asking you to rate your response on a scale for example from never to fairly often. The questions will ask about topics such as health and your feelings and thoughts about several topics like stress and coping with discrimination and the COVID-19 pandemic. You will also complete several brief background measures regarding general information such as your age, birth date, marital status, income, employment status, political affiliation, vaccination status, race/ethnicity, and level of education.

Are there any risks involved in participating in this study?