

EXPERIENCES OF EMPLOYEES WITH CHRONIC
HEALTH CONDITIONS DURING THE
COVID-19 PANDEMIC

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ABSTRACT

Although workers with chronic health conditions have received little attention in past Industrial-Organizational Psychology research, the COVID-19 pandemic has brought new concerns for the workplace safety of these employees. I applied the JD-R model to a sample of 143 workers with chronic conditions, looking at how prevalent demands and resources impacted levels of burnout and emotional well-being. Quantitative analyses supported that job demands (i.e., devaluation and job insecurity) were generally related to negative health outcomes, while job resources (i.e., support and flexibility) were related to better health outcomes. Results also indicated that the impact of demands and resources on health might vary based on condition characteristics, such as visibility. The results of this study can help organizations better understand the unique impacts of job demands and resources for those with chronic health conditions. With this information, organizations can create more appropriate interventions and accommodations for this workplace population.

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LIST OF SYMBOLS

B , unstandardized coefficient in a regression

Beta, standardized coefficient in a regression

df , degrees of freedom

M , mean

N , sample size

n , number of participants

p , p-value

r , Pearson's r for correlations

R^2 , multiple correlation squared

SD , standard deviation

SE , standard error

t , t-value

sr^2 , semi-partial correlation squared

95% CI , 95% confidence interval

α , Cohen's alpha value

*, Statistically significant at a $p < .05$ level

**, Statistically significant at a $p < .01$ level

CHAPTER I

INTRODUCTION

Chronic health conditions directly affect approximately 60% of adults in the United States of America (U.S.) (Centers for Disease Control and Prevention [CDC], 2020). A chronic health condition is defined as a condition that lasts a year or longer and requires ongoing medical attention and/or limits daily living activities (CDC, 2020). These conditions can include, but are not limited to, heart diseases, cancers, lung diseases, diabetes, and arthritis. The CDC (2020) highlights chronic conditions, such as cancer or heart disease, as the leading cause of death and disability annually in the U.S. Previous research regarding health conditions have used terms such as “chronic disease”, “chronic illness”, and “chronic condition” interchangeably. To avoid confusion between these similar terms and their implications, the generic term “chronic health condition” is used in the present study to reference these types of conditions.

Chronic Health Conditions (CHCs) can be mentally and physically taxing, from the symptoms themselves, the social or personal consequences of symptoms, and even financial impact, such as health care expenses. An estimated 90% of U.S. health care expenditures annually are for people with chronic physical or mental diseases (CDC, 2020). Average annual health spending (e.g., prescriptions, home health, inpatient care) for those with chronic conditions are also exponentially more than those with no diseases. People with one or two CHCs can expect to pay over two-times more than the annual average (\$2,000), while those with five or more conditions spend about 14 times more than those with no CHCs (Buttorff et al.,

2017). Despite a majority of the chronically ill population being between the ages of 18-65 and experiencing a potential financial burden from increased health care costs, research suggests that people with long-lasting chronic diseases are less likely to participate in the active workforce (Rijken et al., 2013). Those who do participate in the workforce encounter various daily challenges, especially during the COVID-19 pandemic, as those with pre-existing conditions are more susceptible to severe illness. However, employees with CHCs faced unique difficulties in the workplace even before the pandemic.

Chronic Health Conditions and Work

A lower level of participation in the workforce or more difficulty in working, is likely a result of the health effects of CHCs. People with CHCs report symptoms that can impact their daily living activities, such as poorer sleep quality (Eisner et al., 2002) and higher levels of depressive symptoms and psychological distress (Armon et al., 2014; Munir et al., 2007). Those with conditions that are more physical in nature, such as diabetes or stroke, may be more likely to also develop mental health conditions, like depression (U.S. Department of Health and Human Services, 2020). Physical and psychological distress due to conditions can lead to poorer management of symptoms in the workplace (Munir et al., 2007), as well as higher levels of burnout (Armon et al., 2014).

Symptoms caused by many CHCs are ever-changing and can vary day-to-day (Jinnett et al., 2017). In response to fluctuating pain and well-being, employees may have problems performing or finishing work tasks (Varekamp & van Dijk, 2010). Compared to those with no conditions, employees with CHCs report higher levels of presenteeism (i.e., productivity loss at work due to illness, injury, or other condition; Johns, 2010), which can lead to mistakes at work,

additional negative health outcomes, and financial loss (Collins et al., 2005; Munir et al., 2007). This population also reports increased absences and sick days from work due to fluctuating wellness and ongoing medical requirements (Jinnett et al., 2017). These fluctuating symptoms can also impact the degree of difficulty caused by job demands employees encounter on a day-to-day basis (Kirk-Brown & Van Dijk, 2016). For example, a worker with arthritis might find it more difficult to complete manual tasks during a flare-up. Given the work limitations caused by various chronic conditions (Munir et al., 2005), supervisor and organizational support can be especially important for adapting to illnesses in the workplace (e.g., schedule flexibility).

Chronic Health Conditions and COVID-19

According to the CDC (2020), people with existing chronic conditions are at an increased risk of experiencing severe illness if infected by COVID-19. An analysis of COVID-19 hospitalizations in Wuhan, China showed a large percentage (37.3%) of COVID-19 patients diagnosed with moderate, severe, and critical conditions had at least one CHC (Zhang et al., 2020). With this potential risk, some employees are wary about the possible dangers of returning to the workplace. Employers are required to make reasonable accommodations for employees under the Americans with Disabilities Act (ADA), which encompasses many chronic conditions (e.g., diabetes, lung diseases; DeFreitas, 2020). In fact, “long-covid”, or ongoing symptoms after infection, could be considered a disability under the ADA (U.S. Department of Health and Human Services, 2021). Some individual organizations have set basic guidelines for work accommodations such as mask mandates, alternative work assignments/locations, maintained health insurance benefits, and extended leave of absence (e.g., University of Washington, 2020). General organizational actions identified to assist employees during the pandemic include

flexible work arrangements, communication of plans, and well-being programs (Teng-Calleja et al., 2020). Though various vaccines (e.g., Moderna, Pfizer-BioNTech) have been developed to reduce the risk of contracting COVID-19, some people are unable to receive these vaccinations due to underlying medical conditions or allergic reactions (CDC, 2021), which leaves them at an increased risk for serious health effects if exposed to the virus. Despite businesses reopening on a larger scale as more people get vaccinated, there is still anxiety about the danger of returning to work for this at-risk group (Chuck, 2021).

Researchers have not yet explored the overall impact of the COVID-19 pandemic on workers with CHCs and the adequacy of accommodations granted by employers. Given the challenges experienced by this population, and those additional hindrances caused by the pandemic, this study was designed to examine three pertinent research questions using qualitative methods. Those three questions were:

- (1) What are organizations doing to help workers with CHCs during the COVID-19 pandemic?
- (2) How do workers perceive the support offered from their organization?
- (3) How valued and connected to their organization do workers with CHCs feel amidst COVID-19?

In addition to these questions, I used quantitative research methods to test a set of hypothesized relationships among job demands and resources for this population within the framework of established organizational stress theory.

The Job Demands-Resources Model

The Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2017; Demerouti et al., 2001) provides the theoretical framework for the base of this study's hypotheses. Job demands are the aspects of a position that require mental or physical effort, therefore associated with costs to the employee (e.g., devaluation, job insecurity, role ambiguity). Job resources represent job aspects that are useful in achieving work goals, foster personal development, or reduce the effects of job demands (e.g., supervisor/organizational support, workplace flexibility; Bakker & Demerouti, 2007). In the JD-R Model, job demands relate directly to an employee's stress and levels of burnout, which is characterized by mental exhaustion and disengagement (Demerouti et al., 2001). Job resources, however, buffer these negative effects of job demands and can lead to engagement and overall positive affectivity. While employees with CHCs encounter many of the same work demands as the general population, their degree of impact may vary. For example, employees with Multiple Sclerosis might find physical job demands more difficult than someone without a chronic physical condition (Lehmann et al., 2021). Likewise, an employee with diabetes may feel stigmatized or pressured in the workplace if they do not keep up with a fast work pace, neglecting their blood glucose levels as a result (Ruston et al., 2013). High levels of job stress and strain without adequate resources can be dangerous for employees with CHCs because such mental strain can trigger physiological responses that exacerbate chronic symptoms (Morris et al., 2011; Strazdins et al., 2004).

For the present study, select job demands and resources were chosen that are particularly relevant to the literature on those with chronic conditions. These selected demands are job insecurity and devaluation, and resources are social support and workplace flexibility. Variables were also chosen for how they may differ across various conditions, such as the disclosure of

“invisible” versus “visible” conditions. The hypothesized relationships between all variables are displayed in Figure 1 and elaborated upon in the following sections.

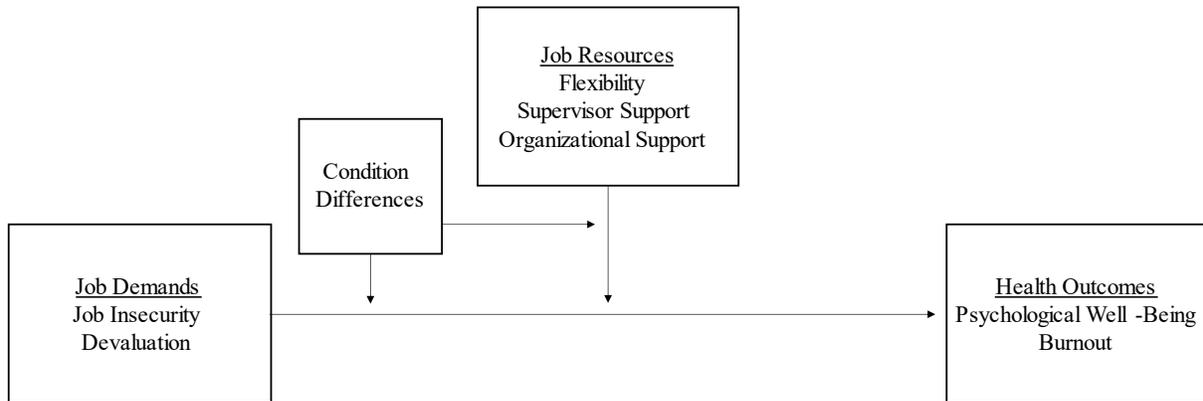


Figure 1 Model of Hypothesized Relationships

Job Demands

The following section will introduce the specific job demands chosen for this population, as well as the first two hypotheses.

Job Insecurity

Job security is defined as, “the perceived stability and continuance of one’s job” (Probst, 2002, p. 146). Job insecurity (i.e., a lack of job security) is a common cause of workplace stress (Michie, 2002) and a prevalent problem during the COVID-19 pandemic, with the U.S. unemployment rate peaking in April 2020 (14.8%; Congressional Research Service, 2021). The high rate of job insecurity and unemployment has been associated with symptoms of anxiety and depression in young adults (Ganson et al., 2021). These feelings of uncertainty may disproportionately affect employees with CHCs, as a positive relationship between perceived

health risk due to COVID-19 and perceived job insecurity has been supported (Vo-Thanh et al., 2020) .

Additionally, job insecurity has been linked to a wide variety of negative health outcomes in employees, such as long-term illness, poor sleeping patterns, and depressive symptoms (Burgard et al., 2012b; Ferrie et al., 1998). Aligning with this research, I expect job insecurity to relate to employee health. In the present study, I am using two variables to evaluate employee health outcomes: burnout (i.e., a state of mental, physical, and/or emotional exhaustion) and general psychological well-being. These variables capture aspects of both physical and psychological health, allowing for a general, yet applicable measure of effect of job demands on an employee. Adverse health outcomes were also found to be correlated with a number of different workplace stressors in meta-analytic studies (Nixon et al., 2011), so the symptoms are likely to be affected by changes in stressors. Additionally, previous research has found an association between physical health and burnout, especially for cardiovascular and musculoskeletal conditions (Honkonen et al., 2006) . To allow for a more stringent test, analyses controlled for workload, a common job demand, as it has been related to physical and mental health outcomes in previous research (Iles et al., 2010) .

Hypothesis 1: Job insecurity is related to higher levels of burnout and worse psychological health.

Devaluation

According to McGonagle and Barnes-Farrell (2014), meta-perceptions of devaluation (i.e., belief that someone is negatively viewed for their illness) can also threaten workers who strongly associate an illness with their identity. In turn, this identity threat decreases work ability

and causes further work strain. Stigma associated with various visible (e.g., paraplegia) or invisible (e.g., irritable bowel syndrome, diabetes) conditions can also influence the probability that an employee will disclose their illness to supervisors and coworkers or ask for necessary accommodations (Joachim & Acorn, 2000).

Related to the discussion of job insecurity, Butler and Modaff (2016) also found evidence that fear for continued employment is a large motivating factor of not disclosing conditions to employers. With adequate accommodations becoming more essential amongst the COVID-19 pandemic, employees may be at a heightened risk for devaluation perceptions as they disclose conditions to their organizations. Because devaluation has related to strain in prior research (McGonagle & Barnes-Farrell, 2014), I expected that meta-perceptions of devaluation would relate to poorer health outcomes in employees. These relationships are expected while also controlling for workload.

Hypothesis 2: Meta-perceptions of devaluation are related to higher levels of burnout and worse psychological health.

Job Resources

The following section will introduce the specific job resources chosen for this population, as well as the final hypotheses.

Supervisor and Organizational Support

Perceived support for employees with CHCs can impact overall work impairment. Perceived organizational support is an employee's beliefs concerning the extent to which an organization values their contributions and well-being (Eisenberger et al., 1986), while perceived

supervisor support encompasses the general degree to which an employee feels valued by their supervisor (Eisenberger et al., 2002; Kottke & Sharafinski, 1988). Respective conditions have varying degrees of visibility, severity, and acceptance, and thus will likely result in different levels of perceived stressors and support from the organization. In general, workers with CHCs have increased difficulty creating and maintaining social relationships within the workplace (Armon et al., 2014; Varekamp & van Dijk, 2010). Workplace support, however, can be an important mitigating factor in managing CHC symptoms that can lead to work impairment and stress (Gignac & Cao, 2009), as well as increased psychological safety that combats the impact of job demands on employees (Kirk-Brown & Van Dijk, 2016). Furthermore, social support has been related to decreased levels of depressive symptoms, a prevalent hindrance for workers with CHCs (Symister & Friend, 2003).

With the threat of stigmatization and perceptions of devaluation, as previously mentioned, employer support can help build self-efficacy in employees with CHC, which can help employees better manage symptoms at work (Munir et al., 2009). Feeling valued in an organization and supported by coworkers relates to overall better health, as well as better communication of necessary accommodations and self-disclosure (Heinrichs et al., 2018). Though organizational support and supervisor support may be correlated, they both offer a unique insight into employee perceptions of the workplace. For example, a worker may feel more supported by daily interactions with their direct supervisor, but unsupported by the larger organization. By using separate measures, the impact of each dimension of support can be evaluated as a resource for buffering the effects of job demands. It was expected that employees with high perceptions of organizational and supervisor support are expected to be less impacted by job demands.

Hypothesis 3: Perceived supervisor support buffers the relationship between job demands and health outcomes, such that the impact of job demands on health outcomes is weaker when supervisor support is high.

Hypothesis 4: Perceived organizational support buffers the relationship between job demands and health outcomes, such that the impact of job demands on health outcomes is weaker when organizational support is high.

Flexibility

Another valuable resource that mitigates the strain of job demands is a worker's perceived flexibility. Kossek and Van Dyne (2008) divided workplace flexibility into three dimensions: time (i.e., number of hours worked), timing (i.e., when someone works), and place (i.e., where someone works). All of these aspects of flexibility can be important for supporting those with physical and/or mental challenges resulting from CHCs. For example, some employees may not encounter physical challenges in work but find difficulty focusing on tasks or experience more fatigue than the general population (Eisner et al., 2002). In cases such as these, work adjustments such as frequent breaks and more flexible schedules can decrease the effects of burnout (Baanders et al., 2001a). Increased flexibility is especially important when managing doctor appointments and medical treatments that are necessary for those with CHCs (Beatty & Joffe, 2006). Allowing schedule flexibility with these conflicts might combat the high levels of absenteeism and presenteeism associated with CHCs (Jinnett et al., 2017). Overall, workplace flexibility may lessen the negative impact of job demands on employee health outcomes.

Hypothesis 5: Flexibility buffers the relationship between job demands and health outcomes, such that the impact of job demands on health outcomes is weaker when flexibility is high.

The Moderating Effect of Condition Differences

While these job demands and resources of employees with CHCs might differ from the general population, they may also vary depending on condition type. For example, stigma and perceptions of devaluation might affect someone with IBS, a commonly misunderstood and often undisclosed chronic condition (Jones et al., 2009), differently than a more “visible” condition, such as paraplegia (Joachim & Acorn, 2000). So many small factors differ between conditions in the workplace, including mental and physical challenges, visibility, self-disclosure, and more. For this reason, I predicted that the moderating effect of job resources on the relationship between job demands and health outcomes, as well as the impact of job demands, will differ between conditions. For simplicity, I aimed to examine these hypotheses with similar conditions grouped together (e.g., musculoskeletal conditions combined, metabolic conditions combined) using guidance from the International Disease Classification manual from the World Health Organization (WHO, 2019). However, given the diverse array of conditions reported by the sample even when classified into condition groups, analyses were completed by looking at broader condition differences (i.e., number of CHCs diagnosed and visibility of condition).

Hypothesis 6a: Condition differences moderate the relationship between job demands and health outcomes.

Hypothesis 6b: There is a three-way interaction between condition differences and job resources moderating the relationship between job demands and health outcomes.

CHAPTER II

METHODOLOGY

Participants

Eligible participants were full-time or part-time workers, aged 18 years or older, with at least one physical, chronic health condition. Participants were between the ages of 19 and 71 ($M = 36.31$, $SD = 11.81$). In this sample, 106 participants identified as female (74.1%), 31 as male (21.7%), and 6 as non-binary (4.2%). At the time of the survey, 116 respondents were full-time workers (81.1%), while 27 worked part-time (18.9%). A majority of the sample was White ($n = 127$, 88.8%), but respondents also identified as American Indian or Alaskan Native ($n = 2$, 1.4%), Asian ($n = 5$, 3.5%), Black or African American ($n = 1$, 0.7%), Hispanic or Latinx ($n = 6$, 4.2%), and other ($n = 2$, 1.4%). Participants' most prevalent education level was a bachelor's degree ($n = 64$, 44.8%), followed by a master's degree ($n = 34$, 23.8%), some college ($n = 21$, 14.7%), associate degree ($n = 9$, 6.3%), professional degree ($n = 7$, 4.9%), high school or GED ($n = 6$, 4.2%), and doctorate ($n = 2$, 1.4%). In this sample, 66 participants were married (46.2%), 49 were single (34.3%), 15 were in a domestic partnership (10.5%), 10 were divorced (7.0%), and 3 were separated (2.1%).

Participants also indicated whether they were diagnosed with one ($n = 53$, 37.1%), two ($n = 43$, 30.1%), three ($n = 23$, 16.1%), or more than three ($n = 24$, 16.8%) chronic conditions. Common CHCs among participants were arthritis, asthma, IBS, fibromyalgia, and hypermobility disorders. Additionally, 23.9% of participants ($n = 34$) had mental or psychological conditions

accompanying their physical CHCs. The physical conditions indicated by participants were further condensed into groupings provided by the ICD-11 (WHO, 2019), such as disorders of the digestive, nervous, or musculoskeletal system. The frequency of conditions in this sample can be found below in Table 1.

Table 1 Frequency of Diseases According to the ICD-11

Disease Classification	n	Frequency	Examples
Muskuloskeletal System/ Connective Tissue	39	27%	Arthritis, Osteoporosis
Digestive System	35	24%	Crohns Disease, IBD, Celiac Disease, Acid Reflux
Nervous System	33	23%	MS, POTS, Epilepsy, Cerebral Palsy, Chronic Migraines
Endocrine Diseases	31	22%	Diabetes, Hashimotos Thyroiditis, Hyperlipidemia, PCOS, Hypothyroidism
Immune System	26	18%	Lupus, Sjogren's Syndrome, CVID
Respiratory System	21	15%	Asthma, COPD, Other Lung Disease
Circulatory System	18	13%	Heart Disease, Hypertension, Reynaud's Disease
Deveopmental Abnormalities	18	13%	Ehlers Danlos Syndrome, Other Hypermobility Syndromes
Chronic Pain	16	11%	Fibromyalgia
Genitourinary System	10	7%	Kidney Disease, Endomitriosis
Other ^a	23	16%	Skin Diseases, Neoplasms, Sleep-Wake Disorders, etc.

Notes. N=143. Some participants indicated more than one chronic condition, so these frequencies add up to more than the sample size. IBD=Irritable Bowel Diseases; MS=Multiple Sclerosis; POTS=Postural Orthostatic Tachyardia Syndrome; PCOS=Polycystic Ovary Syndrome; CVID=Common Variable Immunodeficiency; COPD=Chronic Obstructive Pulmonary Disease.

^a Conditions that were not commonly found in the sample or not included in the ICD-11 were grouped in this category. This included but was not limited to Lyme Disease, Sleep Apnea, Narcolepsy, Hepatitis, Tinitus, and others.

Procedures

The study was approved by The University of Tennessee at Chattanooga’s Institutional Review Board prior to data collection. Participants were recruited from two main sources. The first set of participants were recruited using Amazon’s MTurk crowdsourcing platform in two phases. First, 900 MTurk workers completed a 2-minute screening survey that asked for simple information identifying participant eligibility, including basic demographics and CHC classification. Those who completed this pre-screening questionnaire were compensated \$0.25.

The 900 responses were then screened, removing those who did not have a chronic health condition, were not currently employed, did not pass the 14eCAPTCHA verification (used to protect against spam responses), and provided illogical responses to short answer questions. Respondents who met the eligibility requirements were invited to complete a second, 15-to-20-minute questionnaire and compensated \$2.00 upon completion. Respondents first provided informed consent to participate in the study, then answered questions regarding their organization's response to COVID-19 and accommodations, workload, job insecurity, feelings of devaluation, general health, perceptions of support, work flexibility, and psychological health. A total of 88 participants were invited to the main survey, and 44 responded. There were 17 people removed for incoherent responses to open-ended questions or not passing both attention checks in the survey, leaving 27 final participants from MTurk.

Because the first sampling procedure resulted in a surprisingly low and insufficient sample size to address the research questions and hypotheses for this study, participants were also recruited through social media platforms, such as Facebook and Reddit, with the incentive of entering a drawing for 29, \$20 Amazon gift cards. In total, 184 participants responded, but 18 did not finish the survey, 34 participants were flagged as providing suspicious or questionable data due to incoherent short-answer question responses, and 16 did not pass built-in attention checks. A final total of 116 participants were retained from the social media surveys. The data from all platforms was combined, creating a final dataset of 143 participants.

Measures

This section includes all information gathered during the data collection process. The measures are categorized according to their role in hypothesis testing and models, such as control

variable, job resource, job demand, or health outcome. All measures and items can be found in Appendix A.

Qualitative Information

Condition and Accommodations. Participants were asked to disclose their diagnosed CHC, and the visibility of their illness. Respondents provided information regarding their organization's response to the COVID-19 pandemic and how this fit with their own needs through open-ended questions. Questions asked how COVID-19 has affected participants' work lives (e.g., absenteeism, work ability, remote employment), what accommodations they feel would help them do their jobs efficiently, and the accommodations they have actually received.

Control Variables

Demographics. The online survey collected information regarding basic sample demographics, such as age, gender, and race.

Workload Quantity. The Quantitative Workload Inventory (QWI; Spector & Jex, 1998) is a 5-item measure of workload quantity, which was used as a general control variable. The responses are rated on a five-point frequency scale (1 = *less than once per month or never* to 5 = *several times per day*). Respondents were asked questions such as "how often does your job require you to work very fast?" High scores on the QWI indicated higher levels of work demands. The QWI exhibited good internal consistency in past research ($\alpha = .82$; Spector & Jex, 1998) and the current study ($\alpha = .87$).

General Health. The RAND Health Survey SF-36 (Ware & Sherbourne, 1992) is a 36-item assessment of eight health topics. The current study used the general health measure (5 items) as a control variable. The RAND health survey subsections have displayed high convergent validity (VanderZee et al., 1996) and good internal consistency ($\alpha = .81$; Ware & Sherbourne, 1992) in previous studies. Higher scores on this measure indicated better general health. The current study found acceptable internal consistency for general health ($\alpha = .79$).

Job Demands

Job Insecurity. The Job Security Index (JSI; Probst, 2003) consists of 18 phrases regarding the future of an employee's position in an organization (e.g., certain, permanent position if I want it, well established). Responses are scored on a yes or no scale, (0 = *no* and 1 = *yes*). Participant's responses were summed to create a total score. For the purposes of this study, positive items were reverse coded so that higher scores indicated higher levels of job insecurity. The JSI has exhibited high internal consistency ($\alpha = .97$), as well as good discriminant and criterion-related validity (Probst, 2003) in previous research, as well as the current study ($\alpha = .95$).

Devaluation. Three items were used to assess chronically ill employee's meta-perceptions of devaluation within an organization (McGonagle & Barnes-Farrell, 2014). This measure showed good internal consistency when developed ($\alpha = .91$), and in the current study ($\alpha = .82$). Respondents were asked to rate the extent others feel that their illness would "negatively affect my job performance", "negatively affect my work capabilities", and "lead to absences

from work”. Responses were scored on a four-point Likert scale (1 = *others do not think this at all* to 4 = *others think this a lot*). Higher scores correspond to higher perceptions of devaluation.

Job Resources

Organizational Support. The Survey of Perceived Organizational Support (SPOS-8; Eisenberger et al., 1986) is an 8-item measure of organizational support. Respondents were asked their level of agreement with statements about their organization, such as “really cares about my well-being”. Items were rated on a seven-point Likert scale (0 = *strongly disagree* to 6 = *strongly agree*) and averaged so that high scores indicated higher levels of perceived organizational support. Previous studies show evidence of high reliability, with alpha values ranging from .89 to .94 (Rhoades & Eisenberger, 2002). The current study found a similarly high alpha value ($\alpha = .94$).

Supervisor Support. Rusbasan’s (2010) measure of perceived supervisor support is a 14-item scale evaluating different facets of supervisor support, including emotional, appraisal, career, resource, and outside-of-work support. These dimensions displayed good alpha values for the support subscales, ranging from .83 to .93 (Rusbasan, 2010). Items were rated on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Respondents were asked to rate how much they agree with a statement, such as “my supervisor would reward me for doing a good job”. Given the high correlation amongst subscales (all $r > .70$), scores were averaged across subscales and combined into one total measure of supervisor support. Higher scores indicated higher levels of perceived supervisor support. The current study found high levels of internal consistency ($\alpha = .95$).

Flexibility. Seven items were created to measure unique aspects of flexibility for this population and timeframe (e.g., location of work, work hours). Respondents were asked how much they agree with the provided statements, such as “I have flexibility with the location that I work,” using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). One additional item was also added, asking participants to state whether others have the same flexibility options. Higher scores indicated higher levels of perceived flexibility. The measure was found to have good internal consistency ($\alpha = .91$).

Health Outcomes

Psychological Well-Being. The current study used emotional well-being, assessed from 5 items in the RAND Health Survey SF-36 (Ware & Sherbourne, 1992), as a measure of general psychological health. Higher scores indicated higher levels of psychological well-being. As previously mentioned, the RAND health survey subsections have displayed high convergent validity in previous research (VanderZee et al., 1996), and good internal consistency ($\alpha = .85$; Ware & Sherbourne, 1992). The current study also found good internal consistency for emotional well-being ($\alpha = .84$).

Burnout. The Shirom-Melamed Burnout Measure (SMBM; Melamed et al., 1992) is a 14-item measure of burnout with three subcategories: emotional exhaustion, physical fatigue, and cognitive weariness. Scores were averaged across subcategories to create an overall measure of burnout. Respondents were asked to indicate how often they experience feelings related to the prompts, such as “I feel physically tired,” using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Higher scores indicated higher levels of burnout. Evidence of good internal

consistency was shown in previous studies ($\alpha = .92$; Gerber et al., 2018), as well as the current study ($\alpha = .93$).

CHAPTER III

RESULTS

Data Analysis Overview

All analyses were done using SPSS V26. Hypotheses 1 and 2 were analyzed using multiple regression to look at the effect of job demands on each health outcome, while controlling for relevant variables. Hypotheses 3–5 were tested through moderated regression using PROCESS Procedure for SPSS Version 3.5.3 (Hayes, 2017) Model 1 to test the effect of resources as buffers in the relationship between demands and health outcomes. For each hypothesis, a total of 4 models were run: 1) job insecurity as the predictor and emotional well-being as the outcome, 2) job insecurity as the predictor and burnout as the outcome, 3) meta-perceptions of devaluation as the predictor and emotional well-being as the outcome, and 4) meta-perceptions of devaluation as the predictor and burnout as the outcome. Additionally, hypotheses 6a, using PROCESS Model 1, and 6b, using PROCESS Model 3, tested for two- and three-way interactions between condition differences and job resources moderating the relationship between job demands and health outcomes. As with 3-6, four versions of each model were tested with the two focal demands (insecurity and devaluation) and the two outcomes (burnout and emotional well-being).

For the qualitative aspect of this study, I used thematic analysis to look for trends of organizational responses, accommodations, and employee perceptions of COVID-19 responses. Specifically, two independent coders assigned themes to the responses of each question based on

a coding guide I developed. I then acted as a third coder to resolve discrepancies between the initial assignments provided by the two coders. Frequency analyses were used to determine the most common codes that appeared in responses.

Quantitative Analyses

Hypothesis 1. Bivariate correlation analyses were used to obtain a preliminary understanding of how job insecurity related to health outcomes. Job insecurity had a significant, positive relationship with burnout, $r = .28$, and accounted for about 7% of the variance in burnout. There was a significant and negative relationship between job insecurity and psychological well-being, $r = -.31$. Job insecurity explained 9% of the variance in psychological well-being. Descriptive statistics and correlations for study variables can be found in Table 2.

Table 2 Descriptive Statistics and Correlations for Study Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	36.31	11.81	-												
2. Race	1.11	.32	.07												
3. Gender	1.77	.42	-.28**	-.24**	-										
4. CHC Number	2.13	1.09	-.12	.02	.23**	-									
5. Visibility	1.47	.65	.08	-.02	-.02	.14	-								
6. Quantitative Workload	16.85	5.52	.01	-.06	.07	.03	.08	-							
7. General Health	32.52	19.31	.25**	.03	-.21*	-.34**	-.26**	.01	-						
8. Job Insecurity	4.83	5.74	-.08	-.001	-.001	.09	-.03	.18*	-.10	-					
9. Devaluation	1.93	.70	-.16	-.14	.10	.10	.14	-.02	-.34**	.20*	-				
10. Supervisor Support	5.04	1.37	.01	-.10	.09	.08	.15	-.26**	-.10	-.31**	-.05	-			
11. Organizational Support	4.43	1.51	.18*	.04	-.07	-.01	.11	-.18*	.03	-.41**	-.09	.72**	-		
12. Flexibility	4.46	1.60	.26**	.02	-.17	-.01	.02	-.03	.06	-.28**	-.07	.65**	.62**	-	
13. Burnout	4.55	1.33	-.31**	-.09	.17*	.25**	-.01	.12	-.39**	.28**	.25**	-.24**	-.42**	-.31**	-
14. Emotional Well-being	52.90	20.69	.34**	-.09	-.04	-.08	-.03	-.09	.20*	-.31**	-.09	.24**	.32**	.31**	-.57**

Notes. Visibility coded as 1=no one would know about CHC unless told, 2=some would know, 3=almost anyone would know. CHC Number coded as 1=1, 2=2, 3=3, 4=4+. Race coded as 1=white, 2=non-white. Gender coded as 1=male, 2=female. N range = 137-143 $p < .05$, ** $p < .01$

Hypothesis 1 was tested using multiple regression where age, race, gender, workload quantity, and general health were controlled. Of the control variables, general health significantly affected burnout ($B = -0.02, p < .001$), while age significantly affected both burnout ($B = -0.02, p = .011$) and emotional well-being ($B = 0.56, p < .001$). Job insecurity was negatively related to psychological health, $B = -1.08, p < .001$. The slope indicated that a one-point increase in job insecurity was associated with a 1.08 decrease in emotional well-being. Job insecurity uniquely explained 8% of the variance in psychological health. Job insecurity was also positively related to burnout, $B = 0.05, p = .003$. A one-point increase in job insecurity was associated with a 0.05 increase in burnout. Additionally, job insecurity explained 5% of variance in burnout. Job insecurity was significantly related to both outcomes at a similar degree when tested with no covariates. The full results from the multiple regression can be found below in Table 3.

Table 3 Multiple Regression Analyses of Job Insecurity Predicting Health Outcomes

	Burnout					Emotional Well-Being				
	<i>B (SE)</i>	<i>95% CI</i>	<i>Beta</i>	<i>t</i>	<i>sr²</i>	<i>B (SE)</i>	<i>95% CI</i>	<i>Beta</i>	<i>t</i>	<i>sr²</i>
<i>Predictors</i>										
Age	-.02 (.01)	[-.04, -.01]	-.21	-2.59*	.04	.56 (.14)	[.29, .83]	.33	4.06**	.09
Race	-.21 (.32)	[-.85, .43]	-.05	-.65	.002	-6.59 (4.0)	[-16.38, 3.21]	-.10	-1.33	.01
Gender	.10 (.26)	[-.42, -.61]	.03	.37	.001	3.11 (4.0)	[-4.81, 11.03]	.06	.78	.003
General Health	-.02 (.01)	[-.03, -.01]	-.31	-3.99**	.09	.16 (.08)	[-.01, .32]	.15	1.88	.02
Work Quantity	.01 (.02)	[-.02, .05]	.06	.77	.003	-.10 (.29)	[-.67, .47]	-.03	-.36	.001
Job Insecurity	.06 (.02)	[.02, .09]	.24	3.08**	.05	-1.09 (.28)	[-1.64, -.53]	-.30	-3.85**	.08
Model R ²	.27					.26				
<i>No Covariates</i>										
Job Insecurity	.07 (.02)	[.03, .10]	.28	3.49**	.08	-1.10 (.29)	[-1.67, -.53]	-.31	-3.80**	.09
Model R ²	.08					.09				

Notes. Gender coded as 1=male, 2=female. Race coded as 1=white, 2=non-white. N=143

* $p < .05$, ** $p < .01$

Hypothesis 2. Bivariate correlation analyses (previously presented in Table 2) were used to examine how meta-perceptions of devaluation related to health outcomes. Devaluation had a significant, positive relationship with burnout, $r = .25, p < .01$, and accounted for about 6% of the variance in burnout. There was a negative, nonsignificant relationship between devaluation and emotional well-being, $r = -.09, p = .27$.

Hypothesis 2 was also tested using multiple regression where age, race, gender, workload quantity, and general health were controlled. Of the control variables, general health significantly affected burnout ($B = -0.02, p = .001$), while age significantly affected both burnout ($B = -0.02, p = .01$) and emotional well-being ($B = 0.58, p < .001$). Meta-perceptions of devaluation were not significantly related to emotional well-being, $B = -1.59, p = .53$, nor to burnout, $B = 0.25, p = .12$. When tested with no covariates, devaluation significantly predicted burnout, $B = 0.48, p < .01$, but was not related to emotional well-being, $B = -2.72, p = .27$. This positive relationship indicates that a one-point increase in devaluation was associated with a 0.48 increase in burnout. The results of these tests are shown in Table 4.

Table 4 Multiple Regression Analyses of Devaluation Predicting Health Outcomes

	Burnout					Emotional Well-Being				
	<i>B (SE)</i>	<i>95%CI</i>	<i>Beta</i>	<i>t</i>	<i>sr²</i>	<i>B (SE)</i>	<i>95%CI</i>	<i>Beta</i>	<i>t</i>	<i>sr²</i>
<i>Predictors</i>										
Age	-.024 (.01)	[-.04, -.01]	-.21	-2.58*	.04	.58 (.15)	[.30, .87]	.34	4.01**	.10
Race	-.12 (.33)	[-.78, .54]	-.03	-.36	.001	-7.36 (5.2)	[-17.78, 3.06]	-.11	-1.40	.01
Gender	.07 (.27)	[-.46, -.60]	.02	.25	.001	3.78 (4.21)	[-4.56, 12.11]	.08	.89	.004
General Health	-.02 (.01)	[-.03, -.01]	-.29	-3.50	.07	.17 (.09)	[-.02, .35]	.16	1.80	.02
Work Quantity	.03 (.02)	[-.01, .07]	.12	1.50	.01	-.37 (.30)	[-.95, .22]	-.10	-1.24	.01
Devaluation	.25 (.16)	[.06, .57]	.16	1.58	.01	-1.59 (2.51)	[-6.57, 3.38]	-.05	-.63	.003
Model R ²	.23					.18				
<i>No Covariates</i>										
Devaluation	.48 (.16)	[.17, .79]	.25	3.1**	.06	-2.72 (2.48)	[-7.61, 2.17]	-.09	-1.1	.001
Model R ²	.06					.01				

Notes . Gender coded as 1=male, 2=female. Race coded as 1=white, 2=non-white. N=143

* $p < .05$, ** $p < .01$

Hypothesis 3. For hypothesis 3, I tested for a moderating effect of supervisor support on the relationship between job demands and health outcomes. Again, age, race, gender, workload quantity, and general health were included as control variables. Considering job insecurity as the demand, job insecurity remained marginally significant in the model $B = 0.04, p = .06$, and supervisor support was significantly related to burnout, $B = -0.22, p = .005$. However, the interaction between job insecurity and supervisor support was not significant in the model for burnout.

Job insecurity maintained a significant effect on emotional well-being, $B = -0.95, p = .003$, while perceived support was marginally significant, $B = 2.34, p = .06$. There was not a significant interaction between job insecurity and perceived supervisor support in relation to emotional well-being.

In the models involving the demand of meta-perceptions of devaluation, these meta-perceptions were not significantly related to the health outcomes, though supervisor support remained significant for burnout ($B = -.27, p < .01$) and emotional well-being ($B = 3.53, p < .01$). The interaction between devaluation and supervisor support was non-significant in both models. Of the control variables, age and general health were significantly related to both health outcomes.

This hypothesis was tested again in less stringent models without covariates. There were still no interactions between job demands and resources on health outcomes. In sum, perceived supervisor support did tend to have positive effects on health outcomes but did not moderate the relationship between job demands and health outcomes.

Hypothesis 4. For hypothesis 4, I tested for a moderating effect of organizational support on the relationship between job demands and health outcomes. In the first two models, job insecurity remained a significant predictor of emotional well-being, $B = -0.90$, $p = .009$, but had no significant effect on burnout. Organizational support was negatively related to burnout, $B = -0.28$, $p < .001$, and had a marginally significant effect on emotional well-being, $B = 2.16$, $p = .06$. The interaction between organizational support and job insecurity was not significant for either outcome variable.

In the second set of models, meta-perceptions of devaluation were not significantly related to the health outcomes, though organizational support remained significant at similar magnitudes in these models. The interactions between devaluation and organizational support were also not significant. Of the control variables, age and general health were significantly related to both health outcomes.

This hypothesis was also tested in less stringent models without covariates. There were no interactions between job demands and resources on health outcomes. In sum, perceived organizational support did relate to better health but did not moderate the relationship between job demands and health outcomes.

Hypothesis 5. For hypothesis 5, I tested for a moderating effect of flexibility on the relationship between job demands and health outcomes. Again, in the first two models, job insecurity remained a significant predictor of burnout, $B = .05$, $p = .007$, and emotional well-being, $B = -0.95$, $p = .002$. Flexibility also had a significant effect on both burnout, $B = -0.16$, $p = .03$, and emotional well-being, $B = 2.47$, $p = .03$. However, the interaction between flexibility and job insecurity was not significant for either outcome variable.

In the second set of models, meta-perceptions of devaluation were not significantly related to the health outcomes, though flexibility remained significant in these models at similar magnitudes. The interactions between devaluation and flexibility were non-significant. Of the control variables, general health was significantly related to both health outcomes.

This hypothesis was tested again in less stringent models without covariates. There were no interactions between job demands and resources on health outcomes. In sum, flexibility did have benefits for health, but did not moderate the relationship between job demands and health outcomes.

Hypothesis 6a. For hypothesis 6a, I tested for a moderating effect of number of chronic conditions on the relationship between job demands and health outcomes. In these four models, though job insecurity remained a significant predictor of burnout ($B=0.05, p<.01$) and emotional well-being ($B=-1.03, p<.01$), number of conditions and meta-perceptions of devaluation were not significantly related to burnout nor emotional well-being. There was not a significant interaction between either of the job demands and number of chronic conditions for either health outcome. Of the control variables, general health and age were significantly related to both health outcomes. When tested without covariates, the number of CHCs still did not significantly impact the relationship between job demands and outcomes.

To examine another potential difference based on condition, I also tested for the moderating effect of visibility on the relationship between job demands and health outcomes. Job insecurity maintained a significant relationship with burnout ($B = 0.05, p <.01$) and emotional well-being ($B = -1.13, p <.01$), though visibility was not significantly related to either health

outcome in any of the models. There was not a significant interaction between job insecurity and visibility on burnout or emotional well-being.

Visibility and devaluation were not significant predictors of emotional well-being, and there was not an interaction between them. Meta-perceptions of devaluation had a marginally significant effect on burnout, $B=0.31$, $p=.05$, though visibility was not a significant predictor. There was a marginally significant interaction between devaluation and visibility on burnout, $B=0.48$, $p=.06$. The positive interaction coefficient indicates that as the visibility of a condition increases, the positive relationship between devaluation and burnout becomes stronger.

This hypothesis was also tested in a less stringent model without covariates. There were no interactions between job demands and number of CHCs/visibility of condition on health outcomes. In other words, the number of CHCs or the visibility of the condition did not moderate the relationship between job demands and health outcomes.

Hypothesis 6b. Lastly, hypothesis 6b looked for a three-way interaction between number of conditions and job resources moderating the relationship between job demands and health outcomes. The first set of models considered supervisor support as the resource moderator. When no covariates were added to the model, no two- or three-way interactions were found between CHC number and supervisor support on the relationship between job demands and health outcomes. The hypothesis was also tested in a more stringent model controlling for age, race, gender, workload quantity, and general health. There was a significant two-way interaction between job insecurity and number of chronic conditions on emotional well-being, $B=-0.58$, $p=.05$. This negative interaction would suggest that the relationship between job insecurity and emotional well-being becomes weaker as number of chronic conditions increase. These findings

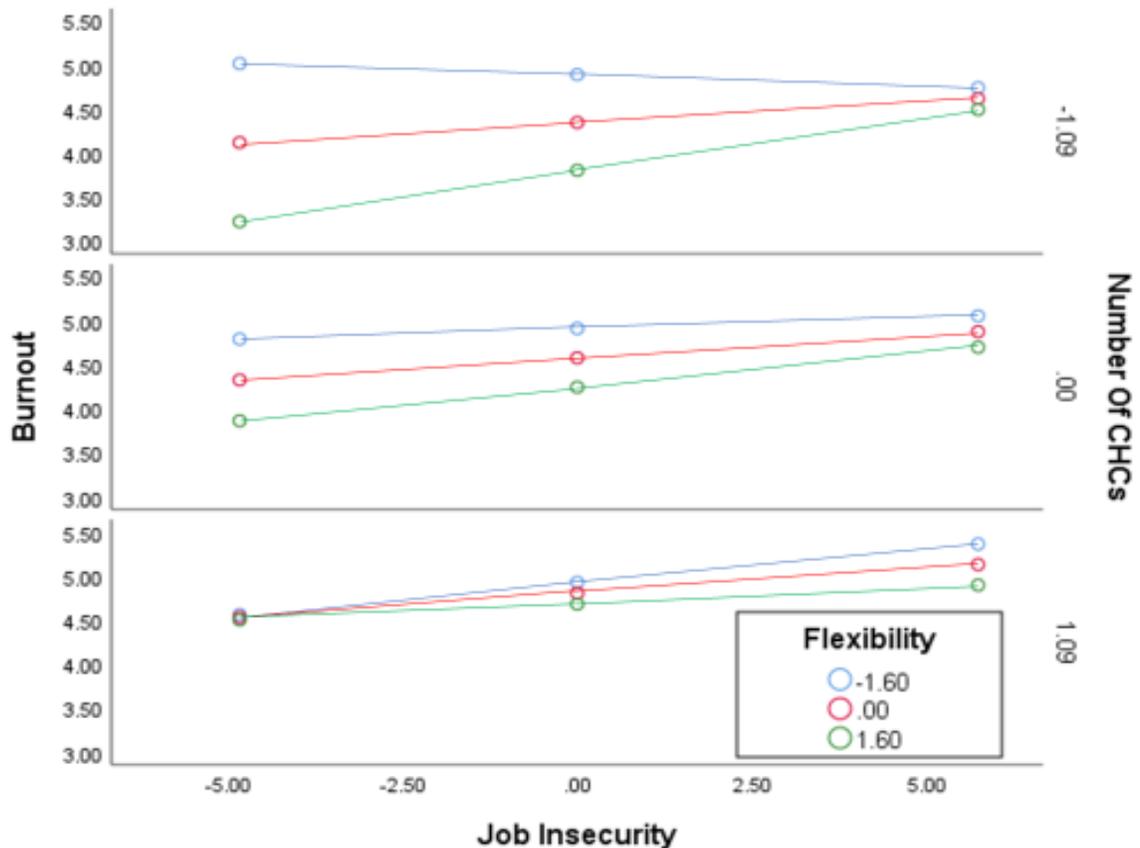
should be taken with caution, however, as this relationship was not found in a simpler model when testing hypothesis 6a or in the simpler model without covariates. There was also a significant two-way interaction between supervisor support and number of chronic conditions, $B=-2.23$, $p=.05$, suggesting that the relationship between supervisor support and emotional well-being weakens as chronic conditions increase. The three-way interactions in these two models with job insecurity relating to emotional well-being and burnout were not significant. When looking at the effect of supervisor support and number of conditions on devaluation, job demands and health outcomes, no two- or three-way interactions were significant.

These analyses were repeated with organizational support as the resource moderator. When no covariates were added to the model, no two- or three-way interactions were found between CHC number and organizational support on the relationship between job demands and health outcomes. The hypothesis was also tested in a more stringent model controlling for age, race, gender, workload quantity, and general health. There was a significant two-way interaction between job insecurity and organizational support, $B=-0.63$, $p=.04$, on burnout. This negative interaction suggests that the relationship between job insecurity and burnout weakens as number of CHCs increase. When looking at the effect of organizational support and number of conditions on job insecurity and emotional well-being, no two- or three-way interactions were significant. There were also no two-way or three-way interactions considering the relationship between devaluation and both health outcomes.

In the final set of models including number of chronic conditions, flexibility was considered as the resource moderator. When no covariates were added to the model, there was a three-way interaction between CHC number and flexibility on the relationship between job insecurity and burnout, $B=-.03$, $p=.03$. The results of this interaction are shown in Figure 2. As

indicated by the graph, flexibility had a stronger moderating effect when respondents had fewer CHCs and lower levels of job insecurity. Flexibility did not make a significant difference in the high levels of burnout indicated by those with multiple CHCs. The hypothesis was also tested in a more stringent model controlling for age, race, gender, workload quantity, and general health. There was a significant, two-way interaction between flexibility and number of chronic conditions, $B=-2.339, p=.025$, on emotional well-being. This suggests that as number of conditions increase, the relationship between flexibility and emotional well-being weakens. There was not a significant three-way interaction. No interactions were significant in the analyses with meta-perceptions of devaluation and flexibility.

Figure 2 Three-Way Interaction Found in Hypothesis 6b Using Number of CHCs



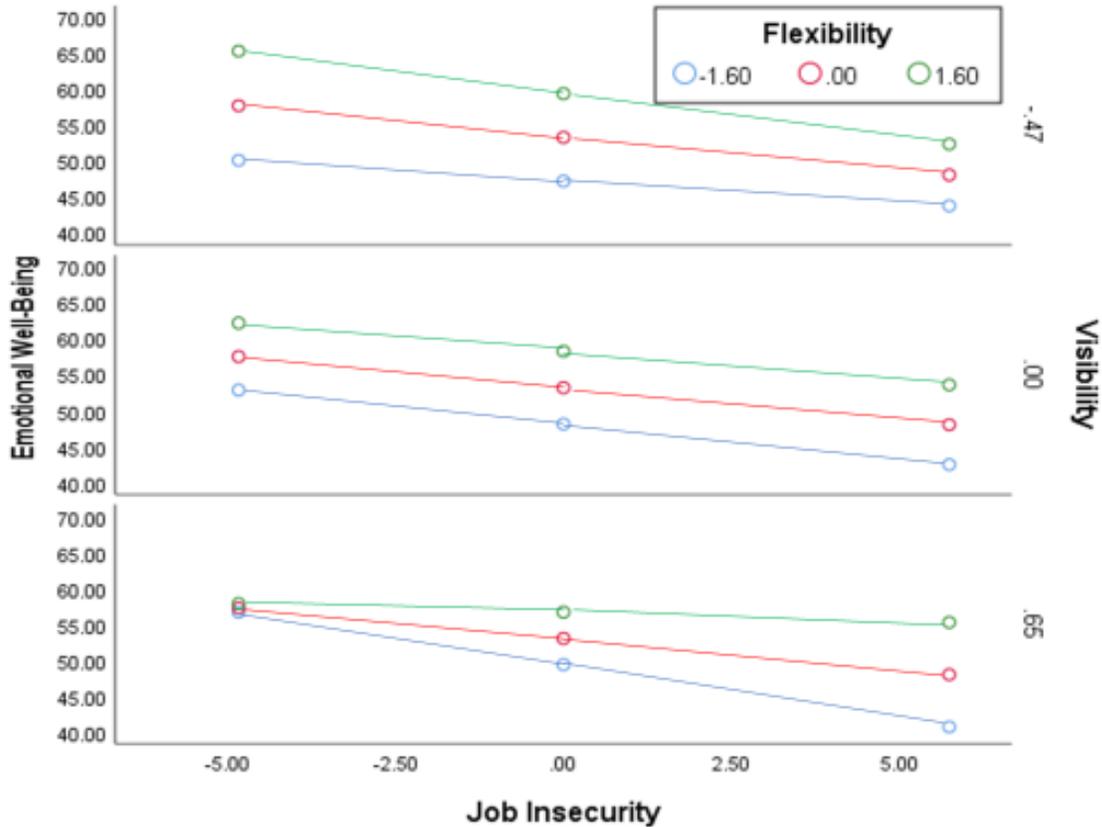
Finally, hypothesis 6b also looked for a three-way interaction with visibility of condition and job resources moderating the relationship between job demands and health outcomes. The first set of models considered supervisor support as the resource moderator. There were no significant two-way or three-way interactions in these models, both with and without covariates.

The second set of models used organizational support as the resource moderator. When no covariates were added to the model, no two- or three-way interactions were found between visibility and organizational support on the relationship between job demands and health outcomes. The hypothesis was also tested in a more stringent model controlling for age, race, gender, workload quantity, and general health. No interactions were significant in the analyses using job insecurity as a predictor. There were also no two-way or three-way interactions considering the relationship between devaluation and emotional well-being. There was a significant interaction between devaluation and condition visibility on burnout, $B=0.49$, $p=.05$, suggesting that the relationship between devaluation and burnout strengthened as condition visibility increased. There was no three-way interaction in this model.

The last set of models considered flexibility as the resource moderator. When no covariates were added to the model, a three-way interaction was found between visibility and flexibility on the relationship between job insecurity and emotional well-being, $B=0.53$, $p=.02$. This suggests that the moderating effect of flexibility is more pronounced when CHC visibility is high, as shown in Figure 3. The hypothesis was also tested in a more stringent model controlling for age, race, gender, workload quantity, and general health. No interactions were found in the relationship between job insecurity and health outcomes. There was also no interaction on the relationship between devaluation and emotional well-being. A significant, two-way interaction between devaluation and visibility was found to effect burnout, $B=0.50$, $p=.05$. This suggests that

the relationship between devaluation and burnout strengthens as visibility increases. No three-way interactions were supported in these models.

Figure 3 Three-Way Interaction Found in Hypothesis 6b Using Visibility



Exploratory Analysis. Though type of condition was not used as a moderator in the analyses due to overlap of conditions, basic exploratory analyses were conducted to identify any possible differences in study variables between condition types. Of the respondents who indicated only one CHC, disorders of the Nervous ($n = 12$) and Digestive Systems ($n = 14$) were most common. When compared in an independent t-test, there were no significant differences

between the groups for the demands, resources, visibility, or health outcomes. The results of this analysis can be found in Table 5.

Table 5 Exploratory Independent Samples T-Test Across Condition Types

	Nervous System		Digestive System		<i>df</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Workload Quantity	16.25	5.23	18.07	5.54	23.75	-.86	.39
General Health	39.58	18.40	31.43	18.75	23.53	1.12	.28
CHC Number	1.58	.99	1.29	.83	21.47	.82	.42
Visibility	1.50	.80	1.29	.61	20.47	.76	.46
Devaluation	1.92	.74	1.88	.82	23.93	.12	.91
Job Insecurity	4.58	4.32	4.07	5.37	23.92	.27	.79
Supervisor Support	5.10	1.23	5.12	1.61	23.73	-.04	.97
Organizational Support	4.51	1.58	4.70	1.51	22.99	-.31	.76
Flexibility	4.13	1.32	4.96	1.46	23.93	-1.52	.14
Burnout	4.67	1.22	4.26	1.70	23.35	.72	.48
Emotional Well-Being	38.00	18.09	52.29	21.94	23.98	1.82	.09

Notes . Nervous System, *N* = 12. Digestive System, *N* = 14.

Qualitative Analyses

The exploratory, qualitative questions were used to understand how organizations responded to the COVID-19 pandemic, employee satisfaction with this action, and employees' perceptions of judgement or stigmatism regarding their illness. The most common organizational responses included mask mandates, social distancing, and transitioning to remote work styles. Most respondents felt satisfied with their organization's response to COVID-19 (*n* = 87; 61%), though others expressed frustration with their business (*n* = 36; 25%). Even some participants who provided more positive responses to their organizations' action indicated that they think there is more that could be done to help employees. Additional accommodations mentioned by

respondents included fully remote work opportunities, additional paid time off or sick leave, and implementing more formal guidelines and restrictions in the workplace. Additionally, a majority of participants reported that they did not feel stigmatized or judged in the workplace due to their illness ($n = 90$; 63%). Many of these responses were accompanied by explanations, some saying that they have not disclosed their illness to others within the workplace or speaking of how supportive and accommodating their organization had been.

CHAPTER IV

DISCUSSION

The purpose of this study was to understand the experiences of workers with a CHC during the COVID-19 pandemic and how their organizations have responded to the pandemic and employee perceptions surrounding these actions. Furthermore, I aimed to identify the impacts of pertinent job demands and resources these employees encounter in the workplace. In the following sections I will discuss the findings of this study, the practical implications based on results, and study limitations.

Applying the JD-R Model, I expected that higher job demands (i.e., job insecurity and meta-perceptions of devaluation) would relate to worse psychological health (i.e., burnout and emotional well-being). In bivariate correlations, both job insecurity and meta-perceptions of devaluation had a significant, positive relationship to burnout. Job insecurity was also negatively related to psychological well-being, though devaluation did not have a significant relationship. Job insecurity remained a significant predictor of health outcomes when tested in a more stringent model with control variables, supporting Hypothesis 1. This supports findings in previous literature, where job insecurity has been linked to adverse physical and mental health outcomes in employees (Burgard et al., 2012a; Ferrie et al., 1998; Ganson et al., 2021). The results of this study replicate this finding in a vulnerable sample during a likely stressful time (i.e., a pandemic).

Hypothesis 2, however, was not supported, as there was not a significant relationship between devaluation and health outcomes when tested in multiple regression analyses with covariates. This is not consistent with findings in previous literature (McGonagle & Barnes-Farrell, 2014), though this could be due to multiple reasons. Interestingly, devaluation was a significant predictor of burnout before control variables were added to the model. This might suggest that other variables, such as general health, explained part of the relationship between meta-perceptions of devaluation and burnout, or simply that devaluation did not explain substantial enough variance to emerge as significant above and beyond general health.

Additionally, while I focused on general devaluation that employees perceived in the general workplace, other factors such as illness type, stigmatism, and disclosure status were not accounted for in analyses. A comprehensive analysis of these variables could show whether devaluation is different for employees who have disclosed their illness to others in the organization or directly sought out workplace accommodations. Employees also might be less likely to disclose some illnesses based on their visibility or stigma, which could impact their perception of devaluation in the workplace (Joachim & Acorn, 2000; Jones et al., 2009). Meta-perceptions of devaluation could be impacted by work modality, as well. Devaluation might not be a prevalent job demand for employees working from home due to less workplace interactions or better management of symptoms.

Based on the JD-R Model, Hypotheses 3-5 predicted that job resources (i.e., organizational support, supervisor support, and flexibility) would lessen the negative impact of job demands on employee health (Bakker & Demerouti, 2007). Initial bivariate correlations supported that job resources were negatively related to job demands, though this relationship was only statistically significant for job insecurity. Additionally, all job resources had a significant,

negative relationship with burnout, and a significant, positive relationship with emotional well-being. However, there was no support for the predicted moderation models, where job resources may offset the effects of job demands. It may be that these resources are beneficial but are not able to offset the effects of demands for this specific population. It is also possible that these resources do have a small to moderate effect on the relationship between demands and health, though the sample size was too small to detect this interaction effect. Per Cohen (2014), a sample of approximately 55 respondents is needed to find a moderate effect of interactions in a multiple regression model, while 392 are required to detect a small effect.

Though the moderated analyses in this study were not significant, there was still evidence of the general value of resources. Perceived supervisor support was found to be a significant predictor of burnout and emotional well-being when analyzed with both job demands. Previous research has found that support is especially important for employees with chronic illness to help mitigate mental and physical challenges brought on in the workplace (Gignac & Cao, 2009; Symister & Friend, 2003). The lack of a stress-buffering effect could be a result of the nature of the sample. For instance, a large number of participants indicated that they worked from home or had hybrid work schedules; work modality changes during the past few years might impact the ways in which employees receive support from their organization or supervisor, as well as how effective that support is.

Flexibility was also hypothesized to moderate the relationship between job demands and health outcomes. Chronic conditions impact the daily functions of those afflicted, or require ongoing medical attention (CDC, 2021). Presenteeism and absenteeism are often associated with CHCs, given the wide range of symptoms people may feel one a day-to-day basis and frequent medical appointment (Jinnett et al., 2017). Previous research has alluded to the importance of

flexibility for this population (Beatty & Joffe, 2006; Eisner et al., 2002), as well as the relationship between schedule flexibility and burnout (Baanders et al., 2001b). In the current study, though there was no significant effect of flexibility on the burden of job demands, flexibility was a significant predictor of both burnout and emotional well-being. Notably, there was a strong correlation between flexibility, supervisor support, and organizational support. These concepts might be measuring some of the same underlying characteristics of a supportive organization. While flexibility is surely related to lower levels of burnout and higher emotional well-being, this resource might not be an appropriate match for the stressors chosen in this study. In other words, flexibility might not make a direct impact on reducing the effects of job insecurity or perceptions of devaluation an employee experiences, even if it impacts their psychological well-being.

Hypotheses 6a and 6b looked at the effect of condition differences on the relationship between job demands and health outcomes, as well as their effect on the moderating relationship of job resources on this relationship. In the models with no covariates, two significant three-way interactions surfaced. First, CHC Number and flexibility significantly moderated the relationship between job insecurity and burnout. This effect was stronger with respondents who had lower job insecurity and less CHCs, though weakened with higher levels of job insecurity and health problems. This suggests that flexibility does moderate the impact of job insecurity on burnout, but the buffering effect can vary based on the employee's health status. Additionally, results also indicated that flexibility buffered the relationship between job insecurity and emotional well-being when visibility of condition was high, suggesting that those with higher visibility are more effected by flexibility. This could relate to an employee's medical needs, illness severity, disclosure status, and many other characteristics related to visibility.

Although there were no significant three-way interactions remained when covariates were used in the models, there were several two-way interactions worth noting. Interestingly, an increase in health conditions weakened the relationship between job insecurity and health outcomes, as well as the effect of supervisor support and flexibility on emotional well-being. These findings might be related to the general health of employees given the number of CHCs with which they've been diagnosed. As an employee is diagnosed with more CHCs and their perception of health decreases, general health might be a more influential predictor of burnout and emotional well-being than workplace stressors. In other words, the impact of their work demands and resources lessen as other demands (i.e., their health) become more salient.

Contrary to the findings with number of conditions, the relationship between devaluation and burnout was strengthened as visibility increased. The more visible their condition is, the more perceptions of devaluation may feel stressful to the worker. This supports previous research that finds disclosure and stigma differences between more “invisible” or “visible” conditions (Joachim & Acorn, 2000). If an employee's condition is less visible, they might choose specific coworkers to whom they disclose their health condition. This could mean devaluation is not as large of a stressor when compared to an employee with a highly visible condition, who cannot choose which coworkers know.

Although there were no significant mean differences identified in the exploratory t-test between nervous and digestive system disorders, there is still reason to compare condition types in future research. Due to the overlap in conditions, the samples size for this exploratory test was less than ideal and would not detect small or moderate differences in variable levels. However, the analyses carried out with CHC number and visibility used as moderators support that

differences amongst conditions can impact the effectiveness of some resources on the relationship between demands and health outcomes.

The exploratory qualitative analyses offered more insight into how organizations have responded to the COVID-19 pandemic, along with the perceptions of at-risk work populations. Common organizational responses were parallel to those outlined in recent literature (Teng-Calleja et al., 2020), such as flexible work arrangements and implementation of organization-wide restrictions/guidelines. A majority of respondents were satisfied with organizational responses to COVID, though some indicated that additional accommodations of fully remote work or additional sick leave would help better accommodate their conditions. Though the current study collected information during the pandemic and did not collect any longitudinal data to compare differences in perceptions during the pandemic, it is possible that work modality changes have affected employees with CHCs in a more positive way. For instance, this could have created more flexibility for employees, allowing them to better manage their illness and physical or psychological challenges faced in the workplace. Some participants also indicated that they did not feel judged or stigmatized for their illness because it had not been disclosed to their coworkers, or they did not need to ask for additional accommodation due to location changes. On the contrary, telework could lessen opportunities for job resources, such as supervisor support. Overall, this offers unique insight into how participants view their organization during this uncertain transition period, as well as indirect effects of organizational responses.

Practical Implications

The current study applied an established occupational health model into a novel context, looking at an understudied workplace population in light of a major world event. While this

research drew attention to a gap in literature focusing on chronic conditions in the workplace, there is still much to be done. Future studies can build from this research and take a more nuanced approach to studying how job demands and resource might vary between condition types. Future directions might also seek to focus on matching unique job demands of those who face CHCs and matching them to appropriate resources, especially as organizations transition back into the workplace.

Though the moderation effects of job resources were not significant, the relationship between resources and health outcomes still support the importance of targeted workplace interventions. Organizational and supervisor support are important for employees, especially during this unsure time period. Showing this support, even if employees are not physically present in the office, can increase their feelings of value and connectedness to the organization. Organizations can also offer more flexibility, given its correlation with health outcomes and other job resources. Allowing workers flexibility with work times or locations based on symptoms variability or medical requirements might combat levels of absenteeism or presenteeism. Though this should be done in moderation, as too much flexibility might lessen the connectedness an employee feels to the organization.

The qualitative analyses also give insight into employee opinions about COVID-19 accommodations. Given the varying responses and job categories surveyed in this study, organizations should also take inventory of their own employee's satisfaction with their response. Though most participants in the current study favored telework and increased paid time off, these interventions are not feasible for all organizations. The qualitative data did emphasize that, while most employees were satisfied with their organization's response to COVID-19, they still felt there was more that could be done to protect workers. Allowing employees to voice

these concerns and increasing their involvement in the decision-making for future accommodations could be beneficial for organizations.

Limitations

One limitation of this study was not being able to test the original version of hypotheses 6a and 6b using type of condition as a moderator. In the survey, participants were asked to select all the CHCs they were currently diagnosed with and write-out their diagnosis if it was not provided in the initial checklist. Since some respondents indicated multiple different illnesses that could not be logically combined into a more generalized category, the variable was too complex for being interpretable in moderation analyses. In the future, researchers looking to compare different CHCs should ask participants for their primary health diagnosis, instead of allowing multiple responses at one time, or use targeted sampling focusing on a few specific conditions that represent varying levels of severity, visibility, or other characteristics.

Another limitation of this study is the sample size and demographics. A large majority of respondents were white and female, meaning there were significantly less responses from other ethnic groups and gender identities. The sample was also fairly educated, as only a small portion had a high school education or lower. This might limit the generalizability of these findings into the greater population. The final sample of 143 participants is also smaller than ideal for detecting small to moderate effects of predictors, especially in the moderation analyses (Cohen, 2014). Future researchers should try to diversify their sample to better reflect the general workplace population and collect a larger sample to detect smaller interaction.

Finally, this study took place during a major historical event that greatly impacted the life of all people worldwide. While this offered a unique viewpoint and topic for data collection, the

generalizability of these findings into other settings might be limited. However, these findings could be reflective of workplace attitudes and perceptions for this population during largescale events. Future studies can attempt to replicate these results to see if the effects hold in time periods without such major contextual events.

Conclusion

Employees with chronic health conditions make up a prevalent, yet understudied workplace population. The purpose of this study was to identify relevant job demands, resources, and health outcomes for this population, particularly during a world-wide pandemic. In this study, job demands (i.e., devaluation and job insecurity) were generally related to negative health outcomes, while job resources (i.e., support and flexibility) were related to better health outcomes. Results also indicated that the impact of demands and resources on health can vary based on condition characteristics, such as visibility. Overall, this study supplies a foundation for future research aimed at understanding the impact of chronic health conditions on employees, in context of a major world event.

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APPENDIX
LIST OF SURVEY ITEMS

Survey Items

1. How old are you, in years?
2. Please provide a brief description of your chronic illness (name, specific type, years since diagnosis, etc.).
3. How would you describe your work arrangement in your job?
 - a. I am an independent contractor, an independent consultant, or a freelance worker.
 - b. I am on call and work only when called to work.
 - c. I am paid by a temporary agency.
 - d. I work for a contractor who provides workers and services to others under contract.
 - e. I am a regular, permanent employee with an organization.
4. Which of the following best describes your current "for-pay" work status?
 - a. Not working
 - b. Part-time (< 35 hours per week)
 - c. Full-time (35+ hours per week)"
5. In what industry are you currently employed?
 - a. Accommodations and Food Service
 - b. Administrative and Support Services
 - c. Agriculture, Forestry, Fishing and Hunting
 - d. Arts, Entertainment, and Recreation
 - e. Construction
 - f. Educational Services
 - g. Finance and Insurance
 - h. Government
 - i. Healthcare and Social Assistance
 - j. Information
 - k. Management of Companies and Enterprises
 - l. Manufacturing
 - m. Mining, Quarrying, and Oil and Gas Extraction
 - n. Other Services (Except Public Administration)
 - o. Professional, Scientific, and Technical Services
 - p. Real Estate and Rental and Leasing
 - q. Retail Trade
 - r. Transportation and Warehousing
 - s. Utilities
 - t. Wholesale Trade
 - u. Other
6. In just one or two sentences, briefly describe what you do at work.
7. Do you expect to leave your current job within the next three months?
 - a. No
 - b. Maybe
 - c. Yes
8. How many hours do you work for pay per week?
9. Do you currently have a chronic health condition (i.e., a condition lasting 1 or more years that requires ongoing medical attention and/or limits daily living activities)?
 - a. Yes

- b. No
10. If yes, how many chronic conditions have you been diagnosed with?
- a. 1
 - b. 2
 - c. 3
 - d. 4+
11. Please select any of the following chronic conditions you have
- a. ALS
 - b. Arthritis
 - c. Alzheimer's Disease
 - d. Asthma
 - e. Cancer
 - f. Chronic Obstructive Pulmonary Disease (COPD)
 - g. Chronic Kidney Disease
 - h. Chronic Lung Disease
 - i. Crohn's Disease
 - j. Cystic Fibrosis
 - k. Diabetes
 - l. Epilepsy
 - m. Fibromyalgia
 - n. Heart Disease
 - o. Hepatitis (Chronic Viral B & C)
 - p. HIV/AIDS
 - q. Hyperlipidemia (High Cholesterol)
 - r. Hypertension (High Blood Pressure)
 - s. Irritable Bowel Syndrome
 - t. Multiple Sclerosis
 - u. Stroke
 - v. Osteoporosis
 - w. Mental or Psychological Conditions
 - x. Other (Please Specify)
12. Please briefly elaborate on your chronic health condition. For example, if you previously selected "diabetes", specify what type (e.g., type 1, type 2, pre-diabetes, gestational diabetes).
13. How long have you been diagnosed with your chronic condition?
14. Please select how you identify.
- a. American Indian or Alaska Native
 - b. Asian
 - c. Black or African American
 - d. Hispanic or Latino
 - e. Native Hawaiian or Other Pacific Islander
 - f. White
 - g. Other
 - h. Prefer Not to Say
15. What is your gender?
- a. Male

- b. Female
 - c. Trans – male to female
 - d. Trans – female to male
 - e. Intersex
 - f. Non-binary
 - g. Other
 - h. Prefer not to say
16. What is your highest level of education?
- a. Some high school
 - b. High school or GED
 - c. Some college
 - d. Associates Degree (for example: AA, AS)
 - e. Bachelor's Degree (for example: BA, BBA, and BS)
 - f. Master's Degree (for example: MA, MS, and MEng)
 - g. Professional Degree (for example: MD, DDS, JD)
 - h. Doctorate (for example: PhD, EdD)
17. What is your marital status?
- a. Single / Never Married
 - b. Married
 - c. Domestic Partnership
 - d. Divorced
 - e. Widowed
 - f. Separated
18. How many children do you have?
- a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4
 - f. 5+
19. Please describe your organizations response to the COVID-19 pandemic. For example, please list any regulations (e.g., mask mandates, social distancing, required vaccines), work hour or location changes, employee assistance programs, and any other adjustments.
20. Are you satisfied with your organization's response to COVID-19? Please specify why or why not.
21. What accommodations have been granted to workers at your organization since the COVID-19 pandemic (e.g., remote working, personal protective equipment, adjustments to job roles)?
22. Are the accommodations listed above available for all employees?
- a. Yes
 - b. Somewhat (Please Explain)
 - c. No
23. What accommodations have been granted to you specifically?
24. Have you used the accommodations offered to you? Why or why not?

25. What further accommodations or adjustments from your employer do you feel are necessary to manage your chronic health condition during the COVID-19 pandemic?
26. How valued and connected have you felt to your organization during the past year?
27. Please indicate how "visible" your condition is to others.
 - a. No one would know that I had a health condition unless I told them.
 - b. Only some people could notice I have a health condition if I did not tell them.
 - c. Most anyone could identify that I have a health condition without me telling them.
28. Have you disclosed your condition to your employer?
 - a. Yes
 - b. No
29. Have you disclosed your condition to your direct supervisor?
 - a. Yes
 - b. No
 - c. N/A
30. Have you disclosed your condition to other coworkers?
 - a. Yes, to most all of my coworkers
 - b. Yes, but only to a few, close coworkers
 - c. No
31. Do you feel judged or stigmatized by others at work because of your chronic health condition? Please explain.

Quantitative Workload Inventory (QWI)

Listed below are questions concerning the demands of your current job. Please answer how frequently you experience these things at work. Choose from the following answers:

1 – Less than once per month or never 2 – Once or twice per month 3 – once or twice per week
 4 – Once or twice per day 5 – Several times per day

1. How often does your job require you to work very fast?
2. How often does your job require you to work very hard?
3. How often does your job leave you with little time to get things done?
4. How often is there a great deal to be done?
5. How often do you have to do more work than you can do well?

Perceived Organizational Support

Listed below are statements that represent possible opinions that YOU may have about working at your organization. Please indicate the degree of your agreement or disagreement with each statement by filling in the circle that best represents your point of view about your organization.

0	1	2	3	4	5	6
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. My organization values my contribution to its well-being.
2. My organization fails to appreciate any extra effort from me. (R)

3. My organization would ignore any complaint from me. (R)
4. My organization really cares about my well-being.

Please select “Strongly Agree” for this statement.

5. Even if I did the best job possible, my organization would fail to notice. (R)
6. My organization cares about my general satisfaction at work.
7. My organization shows very little concern for me. (R)
8. My organization takes pride in my accomplishments at work.

Job Security Index (Scored so higher results indicate more insecurity)

Thinking about your current position, do you feel your job is...

Yes (1) or No (0)

1. Sure ®
2. Unpredictable
3. Up in the air
4. Secure ®
5. Stable ®
6. Questionable
7. Unknown
8. Well established ®
9. My job is almost guaranteed ®
10. Uncertain
11. Can depend on being here ®
12. Future is vague
13. Unclear
14. Permanent position if I want it ®
15. Certain ®
16. This job might not be around too long
17. Unspecified
18. Insecure

RAND-36 Health Survey

General Health

1. In general, would you say your health is...
 1. Excellent
 2. Very Good
 3. Good
 4. Fair
 5. Poor

How True or False are each of the following statements for you?

1 – Definitely true 2 – Mostly true 3 – Don’t know 4 – Mostly False 5- Definitely false

1. I seem to get sick a little easier than other people.

2. I am as healthy as anybody I know.
3. I expect my health to get worse.
4. My health is excellent.

Emotional Well-being

How much of the time during the past 4 weeks...

(1 – All of the time 2 – Most of the time 3 – A good bit of the time 4 – Some of the time
 5 – A little of the time 6 – None of the time)

1. Have you been a very nervous person?
2. Have you felt so down in the dumps that nothing could cheer you up?
3. Have you felt calm and peaceful?
4. Have you felt downhearted and blue?
5. Have you been a happy person?

Meta Perceptions of Devaluation

1 – Others do not think this at all 2 – Others rarely think this of me 3- Others think this of me a moderate amount
 4 – Others think this a lot

Rate the extent to which *other people* generally feel that your illness Would...

1. Negatively affect your job performance
2. Lead to absences from work
3. Negatively affect your work capabilities

Perceived Supervisor Support:

Using the scale indicated below, how much do you agree with each statement?

1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4= Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree

1. If I need to talk with someone at work, I can do so with my supervisor
2. When I talk to my supervisor, I feel like he or she is truly listening to me
3. My supervisor gives me the supplies I need to perform my job
4. My supervisor provides me with the necessary technology to do my job
5. My supervisor helps me understand how things work in our organization

Please select “Strongly Disagree”.

6. My supervisor would reward me for doing a good job
7. My supervisor has always provided me with encouragement on my job performance
8. My supervisor makes sure I am recognized for my accomplishments
9. My supervisor recognizes there is more to life than my job
10. My supervisor would allow me to take care of pressing outside-of-work issues
11. My supervisor wants to know about my life outside of work
12. My supervisor can provide me with training to further develop my job skills
13. My supervisor can and would inform me of potential promotional opportunities

14. My supervisor would help me build the skills needed to further my career

Shirom-Melamed Burnout Measure

Please indicate if you have recently experienced the following feelings.

1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4= Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree

1. I feel tired.
2. I have no energy for going to work in the morning.
3. I feel physically drained.
4. I feel fed up.
5. I feel like my “batteries” are “dead.”
6. I feel burned out.
7. My thinking process is slow.
8. I have difficulty concentrating.
9. I feel I am not thinking clearly.
10. I feel I am not focused on my thinking.
11. I have difficulty thinking about complex things.
12. I feel I am unable to be sensitive to the needs of coworkers and/or clients
13. I feel I am not capable of investing emotionally in coworkers and/or clients.
14. I feel I am not capable of being sympathetic to coworkers and/or clients.

Flexibility

Please indicate how much you agree with the following statements.

1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4= Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree

1. I have flexibility with the location that I work.
2. I have flexibility with the number of hours I work.
3. I have flexibility with the times that I work during the day.
4. If I had a doctor's appointment or other medical treatment, I could attend without worrying about my work schedule.
5. My work arrangements allow me to appropriately manage my health conditions.
6. My needs for work flexibility are respected by my peers.
7. My needs for work flexibility are respected by my employer.
8. My schedule meets my health needs.
9. Are these flexibility options available to all workers at your organization or are your options for flexibility specific to you?
 - a. Yes, available to all workers
 - b. Some but not all arrangements are available to all workers
 - c. No, other workers do not have the same flexibility that I do

VITA

Stephanie Penpek was born in Knoxville, Tennessee and is the third of three children. She attended East Tennessee State University where she became interested in how aspects of psychology and business interact. Stephanie completed her Bachelor of Science degree in May 2020 in Psychology, minoring in Business Management. She then decided to attend graduate school at the University of Tennessee at Chattanooga. Stephanie graduated with her Master of Science in Industrial-Organizational Psychology in May of 2022.