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The Effect of COVID-19 Risk-Enhancing Job Characteristics on Emotional Exhaustion

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ABSTRACT: The COVID-19 pandemic has posed heightened threats to worker well-being. We know that different jobs pose different levels of risk to employees. Physical proximity and exposure to disease/illness are job characteristics that present threats to employee physical health. Based on cognitive theories of stress, we hypothesized that these job characteristics also pose a threat to employees' emotional well-being. Our sample of 177 participants was made up of working students coming from the University of Central Florida, Embry Riddle Aeronautical University, and healthcare professionals recruited using a snowball sampling method. These participants consisted primarily of healthcare workers, food service workers, teachers/ childcare workers, retail workers/ sales associates, amusement/ recreation workers, office assistants, interns, or customer service workers and grocery workers. We found that there is a significant positive association between risk-enhancing job characteristics and emotional exhaustion, but that anticipated workload change does not moderate these relationships. These findings suggest that risk-enhancing job characteristics do negatively affect employees. We suggest that managers act preventatively to limit employee strain by following CDC guidelines and/or offering remote work to reduce risk. Future research could examine other potential anticipated workplace stressors as a function of risk-enhancing job characteristics and employee well-being.

KEYWORDS: anticipated workload change; workload change; covid-19; job characteristics; anticipated stressors; emotional exhaustion

..... *Republication not permitted without written consent of the author.*

Introduction

COVID-19 represents a serious health risk for employees (Centers for Disease Control and Prevention [CDC], 2020a). This novel situation carries threats to physical and psychological well-being in the form of a deadly virus that has affected everyday functioning. Risk of exposure to COVID-19 can be minimized by following CDC guidelines (CDC, 2020c), but the nature of some jobs necessitates physical contact with others. Close proximity increases the chances of spreading respiratory droplets through talking and coughing, the primary way in which COVID-19 is spread (World Health Organization [WHO], 2020). Our sample of majority service and healthcare workers was chosen to reflect the types of employees who would be most affected by COVID-19 workplace stressors. Employees who do hold these kinds of jobs have to perform under the stress of possibly getting sick, bringing it home to their family members, and losing their source of income for a period of time (Hess, 2020). In other words, the context of the pandemic changes the level of perceived risk of required social interaction with others. The present study aims to shed light on two risk-enhancing job characteristics as captured by the Occupational Information Network (O*NET): physical proximity and exposure to disease/infection.

We also argue that the way employees react to the two risk-enhancing job characteristics may be shaped by anticipated changes to employees' work arrangements. The pandemic has brought job losses and furloughs for many workers, but also expansion and hiring for others (McDonald, 2020). People are forward-looking and predict how they may be affected by changes in their work environment (DiStaso & Shoss, 2020). Working off appraisal-based theories of stress (Lazarus & Folkman, 1984), we hypothesize that anticipated workload change will interact with risk-enhancing job characteristics to predict emotional exhaustion, an indicator of psychological strain. Specifically, we expect that anticipated workload reductions will be viewed as an opportunity to minimize risk, leading employees to not perceive these job characteristics as threatening.

In sum, the COVID-19 pandemic provides an opportunity to examine job characteristics that are likely to be perceived as stressful in this unique, unprecedented situation. With the challenging situation workers were going through at the time this study was conducted, we wanted to better understand the workers' emotional

strain. *Emotional exhaustion* refers to the feeling of being overextended and exhausted because of the emotional demands of an employee's work (Demerouti et al., 2001) and is a core component of burnout (Schonfeld & Chang, 2017). This study makes two key theoretical contributions that enhance our understanding of emotional exhaustion. First, it answers calls to investigate the effects of situational contexts on organizational behavior (Johns, 2006; 2018). Second, it extends current research on anticipated changes in stressors by examining how anticipated changes interact with risk-enhancing job characteristics.

The Effect Of a Health Crisis on Workers

How Situations Influence Interpretation of Stressors

Appraisal-based theories of stress, such as the Transactional Theory (Lazarus & Folkman, 1984), highlight the importance of subjective judgments in the stress process. According to the Transactional Theory, stimuli are cognitively appraised on their relevance as well as one's capacity to manage them. This framework suggests that a given stimulus can be appraised differently in different situations. For example, being in close physical proximity to someone who coughs at a grocery store is likely to be appraised differently in June 2019 than it is in June 2020, because the significance of the stimulus differs in each context. Using the same logic, we argue that certain job characteristics will be appraised as threatening in contexts where they can threaten one's well-being. The following sections define two job characteristics that we argue pose risks to one's health and frame them as stressors that predict emotional strain.

Physical Proximity

Physical proximity refers to the level of physical closeness in which an employee is required to perform job tasks around others (National Center for O*NET Development). A few examples of occupations with high physical proximity scores as assigned by O*NET are choreographers, dental hygienists, and physical therapists. Some examples of occupations with low physical proximity scores are farmworkers and laborers, lawyers, and fine artists (i.e., painters, sculptures, illustrators). Occupations with high physical proximity scores have several common features: they all are required to touch, work with, and/or be around other people to a large degree.

In most contexts, physical proximity is not likely to be appraised as a stressful job characteristic because it poses little threat to one's health. However, the COVID-19 pandemic represents a situational factor that alters the consequences of physical proximity. Specifically, sharing physical space with others represents a greater risk of contracting COVID-19 (CDC, 2020b). In this context, we expect that physical proximity will be perceived as a stressor because of these potential physical and psychological consequences. We therefore hypothesize that physical proximity will be positively associated with emotional exhaustion.

Exposure to Disease/Illness

Exposure to disease/illness refers to the extent to which a job requires the employees to be exposed to disease or infections. Jobs in the medical field that require working with sick patients pose a greater exposure to disease than jobs that do not. Thus, jobs with high exposure include acute care nurses, dental hygienists, and family and general practitioners. Occupations with low exposure to disease/illness include those that do not require working with sick patients, such as travel agents, traffic technicians, and video game designers.

Before the COVID-19 pandemic, exposure to disease may not have been perceived to be a stressful stimulus to employees in occupations like healthcare, who are provided with the appropriate training to treat/prevent the spread of infectious disease. However, exposure to disease may pose more of a threat to service workers who are not provided with that type of training and are at a higher risk of losing their jobs due to the spread of a virus. Healthcare professionals are regularly exposed to disease/illness, and they are trained on effective and clear procedures to manage serious risks (Occupational Safety and Health Administration [OSHA], 2008). Regardless, COVID-19 represents a novel threat to healthcare professionals because of high levels of media coverage, ongoing vaccine hesitation, limited personal protective equipment, and the highly infectious nature of the virus. Although knowledge of appropriate safety procedures has increased over time, healthcare workers are generally less equipped to deal with COVID-19 compared to other diseases or illnesses (Blumenthal & Seervai, 2020). Employees in occupations with a high disease/illness exposure are more likely to experience emotional exhaustion because of these negative consequences of contracting the disease. Although the

CDC has provided employees, especially healthcare workers, with information about prevention and safety precautions, working with ill patients presents an active, novel threat.

Hypothesis 1a

Job-level physical proximity is positively associated with emotional exhaustion.

Hypothesis 1b

Job-level exposure to disease/illness is positively associated with emotional exhaustion.

Anticipated Workload Change as a Moderator

The Effects of Workload Changes

Job demands are dynamic and change on a day-to-day, week-to-week, and month-to-month basis (DiStaso & Shoss, 2020; Ilies et al., 2007; Ilies et al., 2010). Workload change can be narrowed into two categories: *workload reductions* and *workload intensifications*. Since the COVID-19 pandemic, some workers have experienced workload reductions, which can occur in the form of reduced work hours, fewer in-role responsibilities, or a temporary furlough (Notestine, 2020). Other workers have experienced workload intensifications, which involves an increase in the number of work hours and or level of job demands (Miller, 2020).

Employees foresee and react to future workload changes. This happened, for example, when employees anticipated the possibility of being furloughed at the onset of the pandemic (Wilson et al., 2020). Casper and Sonnentag (2020) found that employees mentally estimate the amount of work they will have to do during a given workday, and they showed that workload anticipation influences their end-of-day vigor and emotional exhaustion. Similarly, DiStaso and Shoss (2020) found that anticipated workload changes attenuated or strengthened the relationship between workload and emotional strain, depending on the trajectory of the anticipated changes (reduction or intensification).

We hypothesize that anticipated workload change will affect individuals' perception of risk prompted by their

risk-enhancing job characteristics. Theory (Lazarus & Folkman, 1984) and empirical evidence suggest that people's emotional reactions to stressors account for anticipated changes in threatening stimuli, such that people have more negative reactions when they think stressors will worsen and more mild reactions when stressors are expected to improve (DiStaso & Shoss, 2020). For example, workers who expect a reduction in work hours or job demands may perceive the reduction as a minimized opportunity to be exposed to COVID-19. Similarly, workers who expect a workload intensification likely perceive this expected change as an increase in risk *if* their job characteristics are also perceived to be threatening. This, in turn, likely influences their emotional well-being. In other words, the effect of risk-enhancing job characteristics will vary as the function of anticipated workload changes. Anticipated workload intensifications will be more emotionally exhausting if those workload changes occur in a job that is perceived to be risk-enhancing, and anticipated workload reductions will be less emotionally draining if the workload change occurs in a job that is perceived to be risk-enhancing.

Hypothesis 2a

Anticipated workload change moderates the positive physical proximity - emotional exhaustion relationship, such that the relationship is weaker if someone expects workload reduction and stronger if someone expects a workload intensification.

Hypothesis 2b

Anticipated workload change moderates the positive exposure to disease/illness - emotional exhaustion relationship, such that the relationship is weaker if someone expects workload reduction and stronger if someone expects a workload intensification.

Method

Procedure, Sample, and Study Context

Data were collected from March 17, 2020 to July 7, 2020. This time period corresponds with the rapid acceleration of confirmed COVID-19 cases and impact on employment in the U.S. (U.S. Bureau of Labor Statistics, 2020b). On April 1, 2020, the CDC issued an official stay at home order, following an advisory urging all non-essential employees who have

the possibility to work remotely to do so (Clark, 2020). Additionally, the unemployment rate jumped from 4.9% in March to a staggering 14.0% in April (U.S. Bureau of Labor Statistics, 2020a). This suggests that many workers expected workload reductions, but some workers experienced workload intensifications during this time if their job role was considered essential (McDonald, 2020). To maximize the variability in the two focal variables (physical proximity and exposure to disease), two recruitment strategies were used. First, we recruited employed adults who were enrolled in courses in Embry Riddle Aeronautical University and the University of Central Florida to obtain a sample of employees in service occupations that were likely to work in jobs with high physical proximity. Second, a convenience snowball sampling method was used to reach participants employed in the medical field to obtain a sample of employees likely to have high exposure to disease/illness. Participants were eligible for the study if they indicated that they worked at least part-time. Participants were asked about their job characteristics, their anticipated workload change, and their emotional well-being. All research activities were approved by both universities' Institutional Review Board.

We gathered responses from 177 employees. The sample's mean age was 29.93 ($SD=13.82$) and 72.9 % ($N=129$) were female. 27.7% ($N=49$) of participants had a medical-related profession, 15.8% ($N=28$) were food service workers, 10.7% ($N=19$) were teachers / childcare workers, 8.5% ($N=15$) were retail workers / sales associates, 8.5% ($N=15$) were amusement / recreation workers, 8.5% ($N=15$) were office assistants, interns, or customer service workers 6.8% ($N=12$) were grocery workers, and 13.6% ($N=24$) were classified as "Other." 66.7% ($N=118$) of participants were White / Caucasian, 20.9% ($N=37$) were Hispanic / Latino, 7.9% ($N=14$) were Asian / Pacific Islander, 6.8% ($N=12$) were Black / African American, and 1.7% ($N=3$) identified their ethnicity as "Other."

Measures

Anticipated Workload Change

Anticipated workload change was measured by using 4 items from Caplan et al. (1980). Items were modified such that participants were asked to indicate the amount of change they expected to see in various aspects of their work over the following two weeks.

Two example items are “How much do you expect the amount of work you have to do to change within the next 2 weeks?” and “How much do you expect the difficulty of work you have to do to change within the next 2 weeks?”. Responses were scored on a 5-point scale ranging from 1 (Decrease a lot) to 5 (Increase a lot). Cronbach's alpha was .86.

Emotional Exhaustion

Emotional exhaustion was measured by using 7 items from the Oldenburg Burnout Inventory (Demerouti et al., 2001). Participants were asked to indicate to which extent they agreed with the following statements about their current job. Two example items are “After work, I tend to need more time than in the past in order to relax and feel better.” and “After my work, I usually feel worn out and weary.” Responses were scored on a 5-point scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Cronbach's alpha was .81.

Physical Proximity

Physical proximity was measured using ratings provided by the Occupational Information Network (O*NET). O*NET's database consists of job-level ratings of job characteristics from extensive job analysis of over 900 jobs conducted by the U.S. Department of Labor. Most ratings are continually compiled by job incumbents or experts in the occupation. O*NET is an established method of assessing job-level risk in occupational risk research (Zhang, 2021; Evanoff et al., 2014). Physical proximity was rated using the item “To what extent does this job require the worker to perform job tasks in close physical proximity to other people?”. Ratings for each occupation were made on a scale from 0-100, with 0 representing “I don't work with other people” and 100 representing “Very close (near touching).” A team of three trained raters matched occupation descriptions provided by participants to a corresponding position in O*NET. The raters resolved any discrepancies during a consensus meeting, which produced 100% agreement.

Exposure to Disease / Infection

Exposure to disease was also measured using ratings provided by the Occupational Information Network (O*NET) and subsequently matched to participants using the aforementioned coding procedure. Exposure to disease/infection was measured using the item

“How often does this job require exposure to disease/infections?”. Ratings for each occupation were made on a scale of 0-100, with 0 representing “Never” and 100 representing “Every day.”

Results

Descriptive Statistics

Descriptive statistics and correlations among study variables are in Table 1. This table shows that proximity to disease was fairly high ($M=69.83$) among our participants whereas less of our participants had much direct exposure to disease ($M=30.95$). It also showed significant correlations between (a) physical proximity and exposure, (b) physical proximity and emotional exhaustion, (c) risk of exposure and emotional exhaustion, and (d) emotional exhaustion and anticipated workload change.

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4
1. Proximity	177	69.83	17.32				
2. Exposure	177	30.95	32.13	.59**			
3. Anticipated Workload Change	177	2.98	.92	.03	.11		
4. Emotional Exhaustion	174	2.97	.78	.23**	.17*	.15*	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 1. Descriptive statistics and correlations for study variables.

Hypothesis Testing

To facilitate interpretation, physical proximity and exposure to disease / illness were mean-centered. Anticipated workload change was centered such that 0 represented an anticipation that workload would stay the same, with lower scores representing an anticipated decrease in workload and higher scores representing an anticipated increase in workload. This centering approach is consistent with recommendations to center variables with meaningful scale points to aid interpretation of regression coefficients (Aguinis et al., 2017). Results of both regressions can be found in Tables 2 and 3.

Variable	Step 1		Step 2	
	<i>b</i> (<i>SE</i>)	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>p</i>
Constant	2.98 (.06)	.000	2.98 (.06)	.000
Exposure to Disease/Illness	.01 (.01)	.039	.01 (.01)	.043
Anticipated Workload Change	.12 (.06)	.074	.12 (.06)	.075
Exposure x Anticipated Workload Change			.01 (.01)	.910
R ²	.05	.016		
Δ R ²			.00	.910

Table 2. Regression analysis summary for the effect of exposure to disease / illness and anticipated workload change on emotional exhaustion.

Variable	Step 1		Step 2	
	<i>b</i> (<i>SE</i>)	<i>p</i>	<i>b</i> (<i>SE</i>)	<i>p</i>
Constant	2.98 (.06)	.000	2.98 (.06)	.000
Physical Proximity	.01 (.01)	.002	.01 (.01)	.002
Anticipated Workload Change	.13 (.06)	.049	.12 (.06)	.050
Proximity x Anticipated Workload Change			.01 (.01)	.210
R ²	.08	.001		
Δ R ²			.01	.210

Table 3. Regression analysis summary for the effect of physical proximity and anticipated workload change on emotional exhaustion.

Hypothesis 1 proposed that risk-enhancing job characteristics were positively associated with emotional exhaustion. Results supported this hypothesis. In line with Hypothesis 1a, job-level exposure to disease was positively associated with emotional exhaustion ($b = .01$, $SE = .01$, $p < .05$). Consistent with Hypothesis 1b, physical proximity was positively associated with emotional exhaustion ($b = .01$, $SE = .01$, $p < .05$).

Hypothesis 2 posited that anticipated workload change would moderate the relationship between risk-enhancing job characteristics and emotional exhaustion, such that the relationship is weaker if participants expected a workload reduction and stronger if participants expected a workload intensification. As displayed in Table 3, the interaction was not statistically significant for the physical proximity - emotional exhaustion relationship ($b = .01$, $SE = .01$, $p = .21$). As displayed in Table 2, it was also not statistically significant for the relationship between exposure to disease / illness and emotional exhaustion ($b = .01$, $SE = .01$, $p = .91$). In other words, the relationship between risk-enhancing job characteristics and emotional exhaustion did not vary as a function of anticipated workload change.

Discussion

This study finds that, in the COVID-19 context, two job characteristics are positively related to emotional exhaustion. The stressor-strain framework (Kahn & Byosiere, 1992), used to describe relationships between workplace stressors and their negative physical and psychological outcomes, has rarely framed job characteristics as stressors. That job characteristics can be directly linked to emotional strain during extreme contexts is important because the COVID-19 pandemic has had a negative impact on employees' mental health (Pfefferbaum & North, 2020). In addition to the known increased risk of contracting COVID-19 (CDC, 2020b), our study suggests that employees working higher risk jobs are especially susceptible to emotional strain.

We hypothesized that anticipated workload change would moderate the relationship between risk-enhancing job characteristics and emotional exhaustion, but these hypotheses were not supported. This may be due to the variability in how employees perceive and make sense of different COVID-19 induced outcomes. For example, some remote workers may suffer from a lack of daily structure, while others benefit from the increased autonomy to their schedule. This finding suggests that anticipating either workload intensification or reduction does not result in anticipating either increased or decreased exposure to COVID-19. In other words, a high workload is not seen as a factor that exposes employees to threatening job characteristics. Future studies may instead find it more useful to examine employees' anticipated changes in other possible risk-enhancing factors. For example, the effect of physical proximity on emotional strain may instead vary as a function of an employee's anticipated social interaction with customers.

Theoretical and Practical Implications

The present study contributes to our understanding of the effects of job design on employees' occupational stress during COVID-19 pandemic. In terms of broad theoretical implications, the present study provides evidence that job characteristics can be interpreted as stressful when societal contextual circumstances link negative consequences to those job characteristics. This finding extends research that makes recommendations for job design. Studies on physical context suggest that physical features of the job context have little effect on worker well-being (Oldham & Fried, 2014), but our study suggests that physical design characteristics may

be important in extreme contexts. Societal events such as natural disasters, pandemics, and economic crises that impact employees and the nature of their work, may alter how existing job characteristics are perceived. These perceptions may, in turn, influence the well-being of the employees occupying these jobs.

Organizations may be able to minimize the impact of risk-enhancing job characteristics on emotional strain by minimizing the risks associated with the job characteristics. Crucially, managers should consider the degree to which employees share space with others. Many U.S. jobs have already transitioned to remote work (Dey et al., 2020) to minimize risk due to physical proximity with others. In many cases, jobs cannot be directly altered. In these cases, strongly enforcing physical distancing and appropriate use of personal protective equipment (i.e., masks, gloves, face shields) may be appropriate as these measures could alleviate some of the stress associated with the job characteristics (Hagger et al., 2020).

Limitations and Future Research

A limitation of the present study concerns the untested mediating mechanisms that link the effects of job characteristics and emotional exhaustion. Thus, future studies should directly assess these potential mediating mechanisms. Some variables that could mediate the observed relationships include COVID-19 anxiety, worry about contracting disease, and perceptions of risk at work. Measuring these possible mediating mechanisms would help isolate the reasons physical proximity and disease / illness exposure predict emotional exhaustion. Another limitation of the present study is the wanting sample size. Since hypotheses involving moderation usually require a larger sample size for enough statistical power to detect effects (Aguinis, 1995), our smaller sample size may have resulted in the lack of ability to detect potentially small effects. Lastly, we did not control for base levels of job demands experienced by the respondents which may have accounted for differences in anticipated increases / decreases in workload.

One avenue for future research would involve examining the relationship between risk-enhancing job characteristics and emotional exhaustion over time (Denning et al., 2020). Longitudinal methods are useful for exploring research questions related to the timing and duration of observed relationships (Ployhart & Ward, 2011). The relationship between risk-enhancing job characteristics and strain variables may vary over

time because of the continuously developing nature of the COVID-19 pandemic and its effect on the economy. It is possible, for example, that risk-enhancing job characteristics had the strongest effects on emotional exhaustion at the onset of the pandemic and that employees may adjust to the risk associated with their job over time. Alternatively, it may also be true that COVID-19 risk increases the longer that people hold a risk-enhancing job.

Concluding Remarks

This study emphasizes the importance of the effects of extreme contexts and how they change how job characteristics are perceived. The results of this study provide perspective on how the COVID-19 pandemic has intensified the amount of emotional exhaustion people experience while on the job. By studying risk enhancing job characteristics, we were able to gauge the negative aspects of work that are being influenced by the context of the pandemic. We encourage the further examination of these variables and how they may differ in a longitudinal context. Our study also provides an opportunity to further isolate what variables may have a mediating effect on risk-enhancing job characteristics that predict emotional exhaustion. COVID-19 has given us a chance to understand how we can better accommodate workers across the globe to make the workplace less taxing, safer, and ultimately beneficial to employee health.

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