

Work Technology and COVID-19: Demands and Resources

Mark Fichtel, Ares Boira Lopez, Shane Connelly, and Yash Gujar
The University of Oklahoma

ABSTRACT

The COVID-19 pandemic has not only placed new demands on society in general but has also exacerbated the demands placed on employees in organizations. Adapting to the use of new technologies can be seen as a job demand under the JD-R framework of workplace motivation and stress. This longitudinal survey study examined the effects of multiple resources and demands on strain in employed individuals. Results indicate that the use of technology as well as the perceived threat of COVID-19 were significant predictors of reduced well-being. Implications for research and practice are discussed.

INTRODUCTION

- Perhaps the most successful model illustrating the effects that demands and resources have for employees is provided by job demands-resources (JD-R) theory, introduced over 20 years ago (Demerouti et al., 2001).
- In addition to job demands and job resources, however, JD-R theory has also begun to examine the impacts of resources and demands external to the work environment.
- One commonly researched example of these external aspects is that of personal resources, which are defined as lower order aspects of an individual that can motivate them or facilitate attainment of their goals (van den Heuvel et al., 2010; Vogt et al., 2016).
- The recent pandemic has not only served as an external demand in and of itself on the broader workforce but has caused a shift in work responsibilities that has placed more technology-related job demands on the workforce as well.
- In these conditions it is likely that those individuals that are more able to adapt their technology use will suffer less strain from such shifts than those that are resistant to such change.

HYPOTHESES

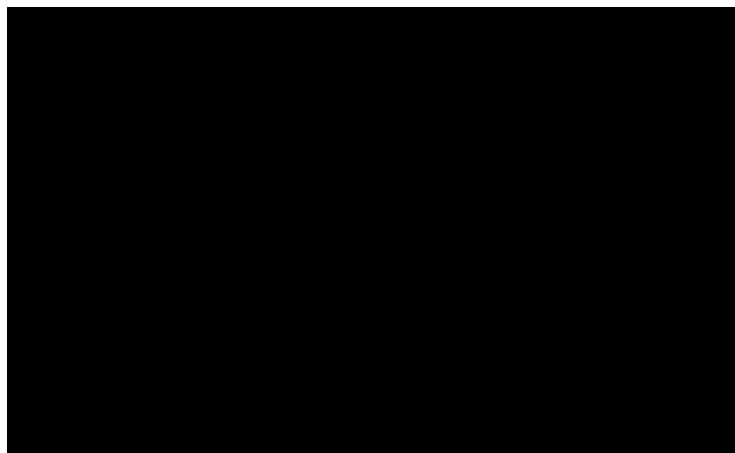
H1a: Increases in external demands increase strain.

H1b: Personal resources moderate the relationship between external demands and strain so that increases in personal resources reduce the positive effects of external demands on strain.

H2a: Increases in job demands increase strain.

H2b: Job resources moderate the relationship between job demands and strain so that increases in job resources reduce the positive effects of job demands on strain.

HYPOTHESIZED MODEL



SAMPLING PROCEDURES

Sample

- 469 employed individuals at times 1 and 2; 250 employed individuals at all times

Sampling Strategy

- Individuals that had agreed to be contacted for research studies with Qualtrics were reached through a personalized recruitment email.
- Participants received \$6.22 in compensation for each 15 to 20-minute survey.
- Participants had to be at least 18 years old and employed during the pandemic.
- Participants who failed any of the quality checks included in the surveys were excluded from the final sample.

Acknowledgement: This material is based upon work supported by the National Science Foundation, Division of Information and Intelligent Systems, under Grant No. 2027332.

METHOD

- Data for this effort was collected with a Qualtrics survey at three time points.
- *Criterion variables:* psychological and somatic well-being were measured using the Griep et al. (2016) scale.
- *Predictor variables:* perceived threat of COVID-19 was measured using the Major et al. (1998) scale and tech use at work using a newly developed scale.
- *Moderating variables:* mindful technology adaptation was measured using the Matthews et al. (in prep) scale and satisfaction with tech at work using a newly developed scale.
- *Covariates:* state negative affect was measured using the PANAS scale.

RESULTS

- The covariates state negative affect and age were significant predictors of strain at time 2 ($R^2 = .519, p < .001$) and time 3 ($R^2 = .530, p < .001$).
- Perceived threat of COVID-19 had a significant effect on strain at time 2 ($\beta = .121, p < .001$) and time 3 ($\beta = .172, p < .001$), providing support for hypothesis 1a.
- Mindful technology adaptation did not significantly moderate the relationship between perceived threat of COVID-19 and strain, thus not supporting hypothesis 1b.
- Workplace technology use had a significant effect on strain at time 2 ($\beta = .202, p < .001$) and time 3 ($\beta = .268, p < .001$), providing support for hypothesis 2a.
- Satisfaction with work technology did not significantly moderate the relationship between tech use at work and strain, thus not supporting hypothesis 2b.
- The hypothesized model was predictive of strain above and beyond the model with only covariates both at time 2 ($R^2 = .564, p < .001$) and time 3 ($R^2 = .581, p < .001$).

DISCUSSION

Limitations

- Only measures used were self-report survey measures.
- Potential history effects – local lockdown policies were not controlled for.

Implications

- Individuals that experienced some significant amount of anxiety as a result of the pandemic also experienced negative health outcomes as a result.
- Individuals that work with technology for longer periods of time are more likely to experience negative health outcomes
- Satisfaction with technology can mitigate negative effects but not eliminate them.