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Always Connected: Technology Use Increases Techno-stress Among Public Managers

The coronavirus pandemic (COVID-19) forced public organizations around the world to quickly integrate technology into workplace practices regardless of their locale, size, or role. Information and communication technologies (ICTs) have grown steadily across all levels of government in the United States. Public managers expect ICTs, particularly online services, social media, and mobile applications, to increase management effectiveness (Porumbesu, 2016; Feeney et al., 2019; Welch & Feeney, 2014). Yet there are potential fallouts associated with ICT use such as adverse effects on work motivation (Demircioglu & Chen, 2019), increased time wasting, and work overload (Fusi & Feeney, 2016).

"Techno-stress" is defined as stress created by ICT use on individuals (Brod, 1984; Tarfdar et al. 2007). Techno-stress affects individuals in both personal and professional spaces, where the increased use of ICTs leads to competing work-life demands, information overload, and longer working hours (Benilan, 2020; Molino et al., 2020). When considering the high degree of stress associated to professions in the public service, additional stress stemming from ICT use may lead to negative consequences for public employees, including burnout, anxiety, and emotional exhaustion.

Negative consequences of techno-stress are particularly relevant for public managers in small and medium-sized local governments, which may lack specialized departments or roles that manage the integration of ICTs and can reduce the burden of everyday ICT use (Newcombe, 2017). Based on this, we ask the following research question: Do top-level public managers in small and medium sized local governments experience techno-stress? Is techno-stress related to certain types of ICTs? Which individual and organizational practices increase or inhibit techno-stress?

Theoretical Framework & Hypotheses

Two primary areas of scholarship, information studies (IS) and psychology, use the term techno-stress to describe the "fallouts of an individual's attempts and struggles to deal with constantly evolving ICTs and the changing cognitive and social requirements related to their use" (Tarafdar, Pullins, & Ragu-Nathan, 2015, pg. 303). Our research integrates public administration literature on technology with these other areas of scholarship. We propose a novel framework to investigate if the stressors associated

with ICTs in IS and psychology literature apply in the public sector context. As illustrated in figure 1, our hypotheses focus on three sets of techno-stress antecedents: ICT use in the workplace, individual practices related to ICT use in the workplace, and organizational practices diffused in public organizations. We indicated in the figure whether we expect a positive (+) or negative (-) relationship between our variable and techno-stress.

Figure 1.
Antecedents of techno-stress among public managers
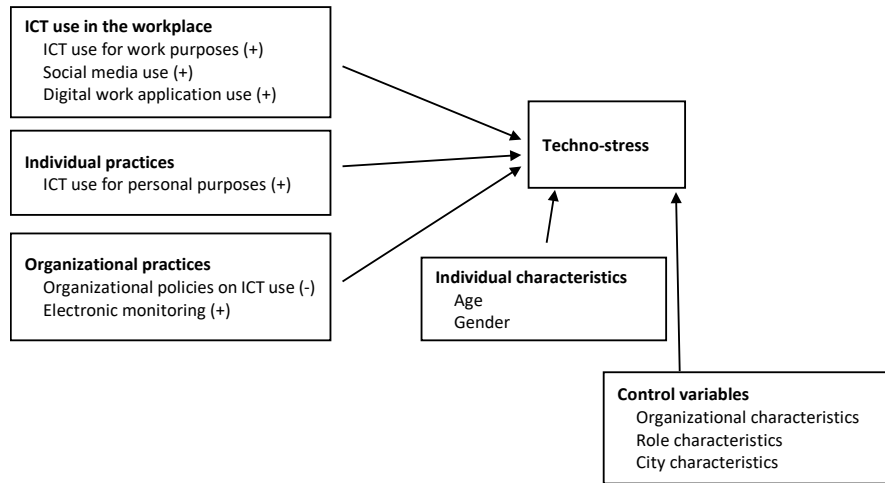
Data

To answer our research questions, we use data from a 2014 nationally representative survey of 2,500 top-level public managers across five departments in 500 U.S. local governments. The sample includes all 184 cities with populations 100,000-250,000 and a randomly selected sample of 316 cities with populations 25,000-99,999. The survey focuses on technology use and civic engagement in local governments and was conducted by the Center for Science, Technology, and Environmental Policy Studies at Arizona State University. The final response rate is 33.07% (RR2 – American Association for Public Opinion Research), with a total number of 790 respondents.

Analysis & Results

Our dependent variable is the averaged scale of the four items reported in Table 1. We note that a majority of public managers agree to "a great deal" and "some deal" that ICTs increase work hours (81%) and make it harder to forget about work (78%). A smaller percentage agree that ICT use increases stress in the job (66%) and an even smaller one reports that ICTs make it harder to focus at work (40%). Overall, public managers in local government report a high level of techno-stress with a mean score of 2.82 out of 4 (s.d. = 0.77).

Table 1.
Frequency distribution of items composing the techno-stress scale

	Not at all	A little	Some	A great deal
Made it harder for you to focus at work	33%	27%	30%	10%
Increased your work hours	11%	9%	39%	42%
Made it harder for you to forget about work at home and on the weekends	8%	14%	26%	52%
Increased stress in your job	15%	20%	38%	28%

Survey item: How much, if at all, have technologies such as the Internet, email, cell phones, and instant messaging affected the following?

To examine techno-stress antecedents, we use an Ordinary Least Squares regression. We apply weights according to the sample design, where smaller cities were three times more likely to be selected. We use clustered robust standard errors as respondents may work for the same city. Revisiting our research questions, our results show that ICT use for professional purposes increases techno-stress but public organizations can reduce techno-stress by providing policies and guidelines. Personal use and organizational monitoring do not affect techno-stress.

ICT use in the workplace
We find that techno-stress is positively correlated with frequency of ICT use at work and use of multiple digital work applications. These findings support the argument that techno-stress stems from greater demands and workloads (Barley, 1996; Tarafdar et al., 2007). However, we find that social media use and techno-stress have no correlation. Our results may indicate that social media tools are integrated more effectively in local government practices and activities (Bretscheneider & Parker, 2016; Mergel & Bretschneider, 2013), with public managers reporting social media as being useful in the workplace (Fusi & Feeney, 2016; Khan et al., 2014).

Individual practices related to ICT use in the workplace
Our study finds that using technology for personal purposes during work hours does not affect techno-stress among public managers. While we do not know if the use of ICTs for personal purposes affects work productivity, it is possible that due to the small size of the local governments in our sample, public managers experience lower oversight and have the freedom to use technology tools to balance their different roles.

Organizational practices diffused in public organizations
We do find that organizational policies on ICTs can reduce techno-stress in public managers. It is possible that organizational policies decrease feelings of heightened internal responsibilities by providing insights on how to appropriately use ICTs in the workplace (Bretschneider & Parker, 2016; Fusi & Feeney, 2016). We find no relation between electronic monitoring and techno-stress. It is possible that public managers expect electronic monitoring to occur such that it does not affect their well-being.

Individual characteristics of public managers
When considering the age and gender of public managers, we find that younger generations report higher techno-stress. Public managers from a younger generation might be more constantly connected with ICTs and be at a greater risk of stress in the workplace. Or, older generations might be able to handle techno-stress better because of their experience or roles. We do not find a correlation between gender and techno-stress.

Conclusions and Practitioner Takeaways

The findings in our article highlight an area of future work that investigates how ICT use influences managerial stress in public organizations. We make three primary contributions to public administration and the techno-stress literature:

1) Our findings show that ICT use is a source of techno-stress for public managers.
2) We move away from a positive and normative narrative around ICT use in local government and contribute to a small but growing scholarship investigating the impact of ICTs on public employees' job outcomes.
3) We extend research on techno-stress antecedents in organizational settings by examining the personal use of technology while at work, organizational policies, and monitoring practices, all of which have received limited attention so far.

Practitioners that wish to improve employee well-being and support the use of ICTs can draw the following insights from the study:

1) Increased use of ICTs in the workplace can have a negative effect on employee well-being.
2) Providing organizational policies on ICT use (e.g., best practices and guidelines) may reduce techno-stress.
3) Public managers should not be concerned about the effect on public employees' techno-stress of the use of electronic monitoring and ICTs for personal reasons while at work

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