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Effects of Supervisors' Technology-Mediated Interruption Behavior on Their Work-Life Balance

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ABSTRACT

Although technology-mediated interruption has received substantial research attention over the past several years, most of the existing research investigates the effects of interruptions only from the perspective of the interrupted person. In this paper, we aim to answer the recent calls for research from the interrupters' perspective and develop a research model based upon Conservation of Resources (COR) theory and Action Regulation Theory (ART) to explore the effects of supervisors' technology-mediated interruption behavior. In this model, we propose that supervisors' technology-mediated interruption behavior leads to information overload and sense of control, which impact work/non-work exhaustion and work/non-work performance, and eventually affect the supervisors' perception of work-life balance. We also propose that personal characteristics including supervisors' sense of power and computer experience will moderate the relationships between supervisors' technology-mediated interruption behavior and information overload/sense of control. We plan to test the proposed research model using experience sampling methodology (ESM).

Keywords

Supervisor, Technology-Mediated Interruption, Work-Life Balance, Experience Sampling Methodology.

INTRODUCTION

Over the last few years, the ubiquity of mobile technologies, the wide availability of broadband networks, and the unexpected pandemic together contribute to a dramatic shift in people's work-life patterns. Work from home and work in a flexible schedule have become common practices for many companies and organizations. As a result, the boundary between people's work and life is blurring, and interruptions enabled by advanced communication technologies have become a more significant problem than ever. For example, a supervisor could keep sending instant messages regarding a job task to employees during typically considered off-work time or while the employees are working on other tasks, creating

interruptions to the employees. Although technology-mediated interruption has received substantial research attention over the past several years (Basoglu, Fuller and Sweeney, 2009; Chen and Karahanna, 2018; Cheng, Bao and Zarifis, 2020; Grandhi and Jones, 2010; Tams Thatcher and Grover, 2018), most of the existing research investigates the effects of interruptions only from the perspective of the interrupted person. There is a consensus in previous research that technology-mediated interruption could contribute to a high level of stress or exhaustion in the interrupted person and, therefore, negatively impact their job performance and work-life balance. However, little is known about the other side of this communication dyad – the interrupters.

As a major source of the interruptions, the interrupters could in fact be the key to solving the interruption problem. Interruptions will stop only if the interrupters stop their interrupting behavior. However, many interrupters believe they could benefit from their interruption behaviors, for example by gaining help or resources (Rivera, 2014). Are these beliefs and feelings true? Will technology-mediated interruptions actually benefit or harm the interrupters? What personal characteristics make people more or less likely to interrupt others? How will such interruptions impact their work-life balance? Although we have learned a lot about the consequences of technology-mediated interruptions for its victims, researchers have realized the importance of these less understood research questions and called for more research from the interrupters' perspective (Puranik, Koopman and Vough, 2020).

In this paper, we aim to answer the above research questions and fill the relevant research gap by developing a research model to explore the relationships among supervisors' technology-mediated interruption behavior and its resulting proximal outcomes including information overload and sense of control, as well as the subsequent distal outcomes including work/nonwork exhaustion and work/nonwork performance, and eventually the supervisors' work-life balance. In this research model, we also investigate how personal characteristics such as supervisors' sense of power and IT experience/computer self-efficacy moderate the proposed relationships among

supervisors' technology-mediated interruption behavior and its consequent direct/indirect outcomes. To test the research model, we plan to collect data using experience sampling methodology (ESM).

LITERATURE REVIEW

Technology-Mediated Interruption

Technology-mediated interruption is defined as an occurrence via technology that impedes or delays an individual by breaking the continuity of an ongoing task (Chen and Karahanna, 2018). While some technology-mediated interruptions such as reminders and notifications are introduced by the recipients themselves, others (such as phone calls and instant messages) are initiated by people other than the recipients. The recipients of such interruptions may provide different levels of response, ranging from not responding to fully engaging in the response (Grandhi and Jones, 2010). In this research, we specifically focus on this type of technology-mediated interruptions that are initiated by people other than the recipients.

There has been a considerable amount of research regarding technology-mediated interruptions in the last few decades. Basoglu and colleagues found significant influence of interruption frequency and task complexity on cognitive load, and its subsequent negative impact on productivity in the workplace, such as decision making performance on financial tasks (Basoglu and Fuller, 2007; Basoglu, 2009; Basoglu et al., 2009). Another group of researchers also found that frequent technology-mediated interruptions could cause technostress and eventually productivity losses, but personal characteristics such as age, computer experience, and extent of control over work can moderate or mediate those effects (Tams, Grover, Thatcher and Ahuja, 2017; Tams et al., 2018; Tams, Ahuja, Thatcher and Grover, 2020). While earlier research focuses on investigating the impact of interruptions on productivity in the workplace, recent research starts to investigate how technology-mediated work-related interruptions would affect both work and nonwork outcomes (Chen and Karahanna, 2018). Overall, a consensus in prior research is that technology-mediated interruptions could contribute to a high level of stress or exhaustion in the interrupted person, and therefore have overall negative impacts on their job performance and/or work-life balance.

However, most of the existing research investigates the effects of interruptions only from the perspective of the interrupted person. Little is known about how technology-mediated interruption behaviors would affect the wellbeing and performance of interrupters.

Conservation of Resources (COR) Theory

Scholars have commonly used the conservation of resources (COR) theory (Hobfoll, 1989) to explain how technology-mediated interruptions influence individuals' psychological overload and emotional exhaustion (Chen

and Karahanna, 2018; Cheng et al., 2020). COR theory postulates that "people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources" (Hobfoll, 1989, p.513). According to COR theory, psychological and behavioral strains will arise from the loss of valued resources. Therefore, when individuals have more work-related interruptions than they can adequately handle (and therefore cause information overload), time and energy resources consumed by the interruptions will deplete individuals' resource reserves and eventually lead to psychological and behavioral strains, causing negative psychological and behavioral outcomes in both work and nonwork domains (Chen and Karahanna, 2018).

Action Regulation Theory (ART)

Another stream of research uses action regulation theory (Hacker, 1994; Hacker, 2003) to explain work interruptions' impact on the self-regulatory process and the resulting effects on both wellbeing and performance outcomes (Puranik et al., 2020). ART suggests that when people have control over their work activity, they tend to execute actions that allow them to optimize their valued work and wellbeing goals (Hacker, 2003). Therefore, when recipients of interruptions do not have control over the interruptions and cannot implement their own action choices to deal with the interruptions, they could make mistakes and experience stress or reduced wellbeing due to low goal progress (Russell, Jackson and Banks, 2019).

Contrary to the primarily negative consequences of interruptions, in real-world people found that interruptions may result in positive benefits such as assisting with the completion of tasks and providing opportunities to reprioritize (Sasangohar, Donmez, Trbovich and Easty, 2012). Based on ART, Russell et al. (2019) propose that the concept of control may provide an explanation for the positive impact of interruptions on work performance. Similarly, Tams et al. (2020) found that worker control can lessen the negative effect of technology-mediated interruptions on work-life balance by allowing an employee to freely adjust his or her work life.

Work-Life Balance

Mobile technologies, combined with widely available broadband networks, have contributed to a blurring boundary between people's work and life. Therefore, technology-mediated interruptions could also cross the work-life boundary and have potentially positive and negative impacts on work-life balance, which is defined as a relationship between work/family conflict and work/family facilitation (Brough, Timms, O'Driscoll, Kalliath, Siu, Sit and Lo, 2014; Kalliath and Brough, 2008). Although there has been abundant research about work-life balance, research investigating the flexible, moment-to-moment transitions/interruptions across work and nonwork domains enabled by the latest mobile technologies is still limited. Scholars have called for

research to study the impact of technology on the blurring work-life boundaries (Kossek, Baltes and Matthews, 2011).

RESEARCH MODEL

To answer the research questions about the effects of technology-mediated interruptions from the interrupters' perspective, we develop a research model to explore the relationships among supervisors' technology-mediated interruption behavior and its resulting proximal outcomes including information overload and sense of control, as well as the subsequent distal outcomes including work/nonwork exhaustion and work/nonwork performance, and eventually the supervisors' work-life balance (Figure 1).

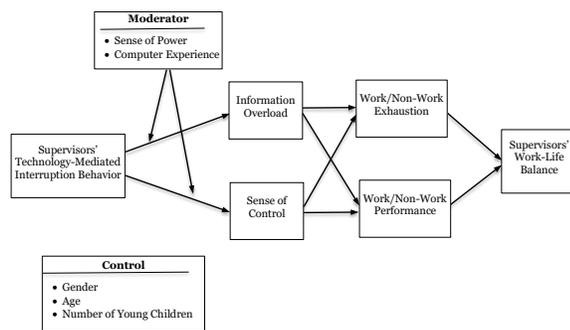


Figure 1. Research Model

Negative Pathway based on COR Theory

Although the COR theory has been mainly applied in prior research to explain how technology-mediated interruptions influence the interruption recipients' psychological overload and emotional exhaustion (Chen and Karahanna, 2018; Cheng et al., 2020), we believe that similar propositions should still hold true from the interrupters' perspective. When supervisors initiate messages to interrupt their subordinates, such interruption behavior should also consume their own time and energy resources. In addition, the more interruptive messages they initiate, the more responses they would expect to receive, and they would have to use more time and energy resources to handle the responses to their initial interruptive messages. When supervisors initiate and then deal with more interruptions/responses than they can adequately handle, they would also experience psychological strains or information overload, which will lead to negative psychological outcomes such as exhaustion in both work and nonwork domains, and negative behavioral outcomes such as poor performance in both work and nonwork domains. Therefore, we propose the following hypotheses.

H1: Supervisors' technology-mediated interruption behavior is positively related to the information overload they experience.

H2: Supervisors' experience of information overload is positively related to their exhaustion in (a) work (b) nonwork domains.

H3: Supervisors' experience of information overload is negatively related to their performance in (a) work (b) nonwork domains.

Positive Pathway based on ART Theory

In this paper, we propose that supervisors' technology-mediated interruption behavior may actually provide benefits to them, and such positive effects can be explained using the ART theory. According to ART, when people have control over their work activity, they tend to execute actions that allow them to optimize their valued work and wellbeing goals (Hacker, 2003). For interrupters, a key difference between them and the recipients of interruptions is that they have full control over the interruptions, and furthermore, they could use interruptions to establish control for specific tasks over their subordinates. For example, when a supervisor faces a tight deadline of a project, he might keep sending messages to his subordinates to check for their work progress even during nonwork days or hours, knowing that such messages might interrupt the subordinates' life. In such a scenario, the more interruptions the supervisor generated, the more he would feel that he is in control of his work and life, and he would be more confident in completing tasks and experience less exhaustion. Therefore, we propose the following hypotheses.

H4: Supervisors' technology-mediated interruption behavior is positively related to their sense of control.

H5: Supervisors' sense of control is negatively related to their exhaustion in (a) work (b) nonwork domains.

H6: Supervisors' sense of control is positively related to their performance in (a) work (b) nonwork domains.

Work-Life Balance

The ultimate outcome in this model is the supervisors' work-life balance, which is achieved by the interaction between work/family conflict and work/family facilitation. Exhaustion, or stress, is found to be positively related to work/family conflict no matter it comes from work or nonwork domains (Tams et al., 2020). Therefore, exhaustion would negatively contribute to work-life balance. On the other hand, several empirical studies have shown that people's perception of work-life balance is positively related to their performance (Harrington and Ladge, 2009; Parkes and Langford, 2008). Accordingly, we propose that:

H7: Supervisors' exhaustion in (a) work (b) nonwork domains is negatively related to their perception of work-life balance.

H8: Supervisors' performance in (a) work (b) nonwork domains is positively related to their perception of work-life balance.

Moderators

Personal characteristics such as computer experience have been found to moderate the effect of the frequency of technology-mediated interruptions on individual stress so that the effect is weaker for higher levels of computer experience (Tams et al., 2018). Although the moderating effect has only been tested with the recipients of interruptions, we predict that a similar effect would hold for the interrupters as well. Therefore, we propose that:

H9: Supervisors' computer experience moderates the effect of their technology-mediated interruption behavior on information overload so that the effect is weaker for higher levels of computer experience.

H10: Supervisors' computer experience moderates the effect of their technology-mediated interruption behavior on sense of control so that the effect is stronger for higher levels of computer experience.

In addition, scholars have suggested adding people's chronic sense of power as a moderator for the relationship between their negative workplace behaviors and outcomes such as resource depletion and sense of control (Zhong and Robinson, 2020). In our scenario, supervisors with a higher sense of power would generally want to gain more control and therefore would allocate more resources towards their interruption behavior and therefore less feeling overloaded. Accordingly, we propose that:

H11: Supervisors' sense of power moderates the effect of their technology-mediated interruption behavior on information overload so that the effect is weaker for higher levels of sense of power.

H12: Supervisors' sense of power moderates the effect of their technology-mediated interruption behavior on sense of control so that the effect is stronger for higher levels of sense of power.

METHOD

We plan to collect data using experience sampling methodology (ESM). Participants will be recruited from the MBA alumni of a large university in China, and they must be supervisors in their current full-time job to qualify for this study. Participants will complete an initial online entry survey on a weekend, assessing their demographics, sense of power, and computer experience. One week after the initial one-time entry survey, participants will complete daily online surveys for ten consecutive workdays (Monday to Friday over a period of two weeks) at approximately 9:30 PM each evening. The daily surveys assess their daily technology-mediated interruption behavior, information overload, sense of control, work/nonwork exhaustion, work/nonwork performance, and perception of work-life balance on that specific day.

All scales used in our survey are initially developed and validated in English, but the survey will be administered in Chinese. Following the approach suggested by Harkness, Van de Vijver and Mohler (2003), a bilingual researcher

will translate the questions into Chinese, and this version will then be back-translated into English by another bilingual researcher. The back translation will be compared with the English original to include any revisions and ensure conceptual equivalence.

Measures

We measure supervisors' Technology-Mediated Interruption Behavior, Information Overload, Work/Nonwork Exhaustion, and Work/Nonwork Performance by adapting scales developed (or used) by Chen and Karahanna (2018). We use an 8-item instrument developed by Anderson, John and Keltner (2012) to measure Sense of Power. We assess Computer Experience by adapting a 3-item scale from prior research (Tams et al., 2018). We adapt a 3-item scale developed by Karasek Jr (1979) to measure Sense of Control. Finally, we use a 4-item scale developed by Brough et al. (2014) to measure Work-Life Balance. Responses will be captured on five-point Likert scales. We will also include age, gender, and number of young children as between-person controls in the entry survey. Number of young children will be assessed as the count of children 6 years of age and under living in the participant's household.

CONCLUSION

In this paper, we develop a research model based upon COR theory and ART theory to explore the effects of supervisors' technology-mediated interruption behavior on their perception of work-life balance. Specifically, we propose that supervisors' technology-mediated interruption behavior leads to proximal outcomes including information overload and sense of control, which in turn result in the subsequent distal outcomes including work/nonwork exhaustion and work/nonwork performance, and eventually impact the supervisors' perception of work-life balance. We also propose that personal characteristics, including supervisors' sense of power and computer experience, will moderate the relationships between supervisors' technology-mediated interruption behavior and information overload/sense of control. We plan to collect data from China using experience sampling methodology (ESM) to test the proposed research model.

This study contributes to the technology-mediated interruptions literature by answering recent calls for research from the interrupters' perspective. It improves our understanding of technology-mediated interruptions and their impacts on individuals' work-life balance from a more integrated point of view. This research also contributes to practice by showing supervisors how their work-life balance may be affected by their own technology-mediated interruption behavior.

REFERENCES

1. Anderson, C., John, O. P. and Keltner, D. (2012) The Personal Sense of Power, *Journal of Personality*, 80, 2, 313-344.

2. Basoglu, A. (2009) Technology Mediated Interruptions: Attention Analysis and Impact on Task Performance, *AMCIS 2009 Doctoral Consortium*, 29.
3. Basoglu, A. and Fuller, M. (2007) Technology Mediated Interruptions: The Effects of Task and Interruption Characteristics on Decision-Making, *AMCIS 2007 Proceedings*, 240.
4. Basoglu, K. A., Fuller, M. A. and Sweeney, J. T. (2009) Investigating the Effects of Computer Mediated Interruptions: An Analysis of Task Characteristics and Interruption Frequency on Financial Performance, *International Journal of Accounting Information Systems*, 10, 4, 177-189.
5. Brough, P., Timms, C., O'Driscoll, M. P., Kalliath, T., Siu, O., Sit, C. and Lo, D. (2014) Work-life Balance: A Longitudinal Evaluation of a New Measure Across Australia and New Zealand Workers, *The International Journal of Human Resource Management*, 25, 19, 2724-2744.
6. Chen, A. and Karahanna, E. (2018) Life Interrupted: The Effects of Technology-Mediated Work Interruptions on Work and Nonwork Outcomes, *MIS Quarterly*, 42, 4, 1023-1042.
7. Cheng, X., Bao, Y. and Zarifis, A. (2020) Investigating the Impact of IT-Mediated Information Interruption on Emotional Exhaustion in the Workplace, *Information Processing & Management*, 57, 6, 102281.
8. Grandhi, S. and Jones, Q. (2010) Technology-Mediated Interruption Management, *International Journal of Human-Computer Studies*, 68, 5, 288-306.
9. Hacker, W. (1994) Action Regulation Theory and Occupational Psychology: Review of German Empirical Research since 1987, *German Journal of Psychology*, 18, 2, 91-120.
10. Hacker, W. (2003) Action Regulation Theory: A Practical Tool for the Design of Modern Work Processes? *European Journal of Work and Organizational Psychology*, 12, 2, 105-130.
11. Harkness, J. A., Van de Vijver, F. J. and Mohler, P. P. (2003) *Cross-cultural Survey Methods*, Hoboken, NJ: John Wiley & Sons, Inc.
12. Harrington, B. and Ladge, J. (2009) Present Dynamics and Future Directions for Organizations, *Organizational Dynamics*, 38, 2, 148-157.
13. Hobfoll, S. E. (1989) Conservation of Resources: A New Attempt at Conceptualizing Stress. *American Psychologist*, 44, 3, 513.
14. Kalliath, T. and Brough, P. (2008) Work-Life Balance: A Review of the Meaning of the Balance Construct, *Journal of Management & Organization*, 14, 3, 323-327.
15. Karasek Jr, R. A. (1979) Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign, *Administrative Science Quarterly*, 24, 2, 285-308.
16. Parkes, L. P. and Langford, P. H. (2008) Work-Life Balance Or Work-Life Alignment? A Test of the Importance of Work-Life Balance for Employee Engagement and Intention to Stay in Organisations, *Journal of Management and Organization*, 14, 3, 267.
17. Puranik, H., Koopman, J. and Vough, H. C. (2020) Pardon the Interruption: An Integrative Review and Future Research Agenda for Research on Work Interruptions, *Journal of Management*, 46, 6, 806-842.
18. Rivera, A. J. (2014) A Socio-Technical Systems Approach to Studying Interruptions: Understanding the Interrupter's Perspective, *Applied Ergonomics*, 45, 3, 747-756.
19. Russell, E., Jackson, T. and Banks, A. (2019) Classifying Computer-Mediated Communication (CMC) Interruptions at Work using Control as a Key Delineator, *Behaviour & Information Technology*, 40, 2, 1-15.
20. Sasangohar, F., Donmez, B., Trbovich, P. and Easty, A. C. (2012) Not all Interruptions are Created Equal: Positive Interruptions in Healthcare, *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 56, 1, 824-828.
21. Tams, S., Ahuja, M., Thatcher, J. and Grover, V. (2020) Worker Stress in the Age of Mobile Technology: The Combined Effects of Perceived Interruption Overload and Worker Control, *The Journal of Strategic Information Systems*, 29, 1, 101595.
22. Tams, S., Grover, V., Thatcher, J. and Ahuja, M. (2017) When Modern Technologies Meet Ageing Workforces: Older Workers are More Affected by Demands from Mobile Interruptions than their Younger Counterparts, *Proceedings of the 50th Hawaii International Conference on System Sciences*, 5660-5667.
23. Tams, S., Thatcher, J. B. and Grover, V. (2018) Concentration, Competence, Confidence, and Capture: An Experimental Study of Age, Interruption-Based Technostress, and Task Performance, *Journal of the Association for Information Systems*, 19, 9, 857-908.
24. Zhong, R. and Robinson, S. L. (2021) What Happens to Bad Actors in Organizations? A Review of Actor-Centric Outcomes of Negative Behavior, *Journal of Management*, 47, 6, 1430-1467.