The role of ICT permeability when working-from-home: An examination of work and family outcomes

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Introduction

When going to work was not viable, the advanced information and communication technologies (ICTs), such as email, messaging, and video conferencing (e.g., Microsoft Teams, Google Meet, and Zoom), came to the rescue. With nearly half of all Americans working from home (WFH) during the COVID-19 pandemic, ICTs have become a major tool for people to fulfil work responsibilities and stay connected. Today, although it is possible to return to work, more than a quarter of all professional jobs in the US will still be remote by the end of 2022 and fully remote jobs will continue to increase (Forbes, 2022). Others will work remotely part of the time.

Working remotely from home requires using ICTs both to produce deliverables as well as stay in touch with clients and colleagues. Further, people also rely on ICTs to stay socially connected to family and friends. With the pandemic constraining us from traveling or getting together in person, connecting with friends and family online is vitally important. People rely on ICT tools to connect with others, celebrate holidays, and seek social support. Thus, ICTs provide benefits of productivity and flexibility as well as social connectivity. For both work and family purposes, ICTs have become a crucial part of our life.

However, one implication of this is that those who work from home via ICTs may find themselves spending too much time online and with their technology devices. Americans spend, on average, almost 10 hours per day interacting with technology, which means we spend the vast majority of our waking hours on some form of technology use (Nielsen, 2020). The excessive ICT use can lead to not only, negative physical effects but also negative psychological effects to our overall well-being (Salanova, Llorens, & Cifre, 2013). In addition, although WFH with ICTs provides many benefits, including giving workers more autonomy and control over work and personal responsibilities, the excessive use of ICTs also presents many complications to their work-life balance. For instance, the flexibility that ICTs generate may lead to longer working hours and blurred boundaries between work and family matters.

ICTs, which provide a way to multitask with family and home tasks, blur the boundaries between work and family, thus increasing permeability between them. Permeability, which is defined as "the degree to which a role allows one to be physically located in the role's domain but psychologically and/or behaviorally involved in another role" (Ashforth, Kreiner, & Fugate, 2000: 474), may result in a loss of resources from one environment to another (i.e., work to family or family to work). In addition, many families

must also manage activities for children or elderly family members (Greenhaus & Powell, 2016), which has implications for their ability to meet work-related demands and solve problems as well as maintain harmony in their personal life. Given the limited time and energy resources, the situation is fraught with high levels of anxiety and stress due to work family conflict—this creates a potential for conflict between partners.

Our focus in this research is on dual-earner couples working from home. Dual-earner couples are an important context to examine as it represents an increasingly common family structure. These couples also face unique challenges in allocating resources to balance the simultaneous demands from two jobs and family responsibilities (Gupta & Jenkins, 1985). Employees must juggle those work and family responsibilities and deal with coordination issues as both partners work from home and, if they have children, with the demands of caring and home schooling.

Given the circumstances mentioned above, we examine how work-to-family ICT permeability —engaging work-related activities via ICTs during family time—affects work and family outcomes for dual-earner families. To this effect, we ask – how does the ICT work-family permeability affect work and family outcomes, especially for dual-career families engaged in WFH? We conducted a 10-day diary study of dual-earner couples in live-in partnerships. We chose this methodology based on the recommendation of Wheeler and Reis (1991: 287) who argued that "the 2-week record-keeping period is assumed to represent a stable and generalizable estimate of social life."

Below, we present a framework suggesting that given the human limitations of cognitive and emotional resources, the ICT permeability in WFH situations can create fatigue from being constantly connected for scheduling online meetings, and answering conference calls after regular work time, and social interactions. This ICT fatigue can lead to ICT avoidance and potential conflicts between partners. Thus, our first goal is to investigate how ICT permeability of work and family boundaries influences individual's family relationships through ICT fatigue.

Second, we are interested in investigating ICT permeability on work-related outcomes in remote work settings. With the flexibility ICTs support, employees are able to work whenever and wherever. The increased flexibility and control afforded via ICT helps facilitate productivity through optimized resource allocations. Previous literature shows that employees using ICT enhance their ability to complete work tasks (e.g., Day, Paquet, Scott, & Hambley, 2012). However, there is little empirical research specifically examining the role of ICT in work outcomes such as productivity, work engagement, or job satisfaction. Thus, our second goal is to examine the effect of ICT permeability on an individual's work engagement and satisfaction.

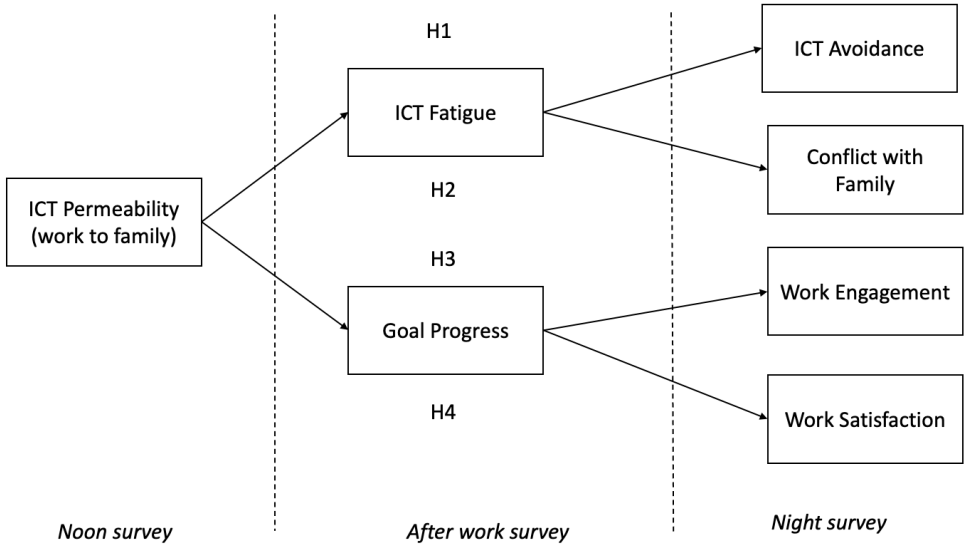
Theoretical Development

The theoretical foundations of this work are based on the Conservation of Resources (COR) theory. As a resource-based theory, COR theory is well suited to explaining the theoretical mechanisms that underlie our model because ICT usage during

WFH changes how people allocate resources. COR theory posits that people strive to gain, protect, and maintain key resources and when these resources are depleted or threatened, people feel fatigue which may lead to avoidance of other activities in order to protect resources and avoid stress (Hobfoll 1989; Chen & Karahanna, 2018). We also integrate and build upon the Boundary Theory, which concerns the ways that individuals create, maintain, or change boundaries in an effort to navigate the world around them (Ashforth et al., 2000), to articulate the effect of boundary management on work and family outcomes. Specifically, we rely on Boundary Theory to further explain how ICT permeability affects ICT fatigue, which in turn, may influence family relations and work outcomes.

Model Development and Hypotheses

Figure 1. Research Model



H1: ICT fatigue mediates the effect of work-to-family ICT permeability on ICT avoidance.
H2: ICT fatigue mediates the effect of work-to-family ICT permeability on conflict with family.
H3: Goal progress mediates the effect of work-to-family ICT permeability on work engagement.
H4: Goal progress mediates the effect of work-to-family ICT permeability on work satisfaction.

Methodology and Results

Data were collected using Experience Sampling Methodology (ESM) which relies on repeated measurements of the same participants multiple times per day across several days in order to grasp within-person variation that would go unnoticed with traditional cross-sectional surveys (Fisher & To, 2012). Participants were recruited by using CloudResearch, a participant-sourcing platform for online research and surveys. We pre-

screened participants to recruit only those who were over 18 years old, living in the United States, living with a spouse/partner, and currently working from home full-time due to the COVID-19 situation. Based on an a priori power analysis, we recruited 223 participants to ensure sufficient power for testing the hypotheses, with an anticipated attrition of 50% provided by CloudResearch. Before implementing the 10-day diary study, we asked the participants to complete a survey that measured their demographic information. For 10 consecutive workdays, participants were asked to respond to three daily online surveys: in the morning (T1), in the afternoon after work (T2), and before going to bed (T3).

As with most diary studies, not all participants completed all the daily surveys for 10 days, and in our analysis, we considered only those who answered at least 70% of the proposed daily surveys. Our final sample contained 117 participants, which is consistent with prominent previous research adopting the same methodological approach (e.g., Pluut, Ilies, Curşeu, & Liu, 2018; Ilies et al., 2017), and we obtained 3,274 data points over 10 days. Forty-nine percent of participants were between 30 and 39 years old, and twenty-eight percent of them were women.

All survey measures were taken from previously validated scales. All hypotheses were significant and supported.

Theoretical Contributions and Implications

This research contributes to work-life balance in several important ways. First, we develop a deeper understanding of the role of ICT permeability in the WFH context. We contribute to ICT permeability literature by responding to the call of Chen and Karanhanna (2018) that investigates the mechanisms and outcomes in terms of technology use for work during non-work time. We challenge the study on using technology for work purposes after work hours that ICT permeability only leads to negative consequences for work outcomes.

Second, we contribute to the IS literature by bringing a novel theoretical perspective of a resource-based theory in the WFH studies. Our theorizing incorporates the complexity and interdependencies inherent in the challenges of WFH (Crawford et al., 2019), allowing us to achieve a more comprehensive picture of the work-life dynamics. With few exceptions (e.g., Magni, Ahuja, & Trombini, 2022), most research in this domain has focused on only work or family outcomes (e.g., Chen, Wang, Benitez, Luo, & Li, 2022). By integrating the resource and the boundary lens, we are able to demonstrate both work and family outcomes simultaneously in the same model. The resource (i.e., COR) and boundary theory has been widely adopted in the organizational behavior research to explain the effects of job demands on individual outcomes, however, they have been overlooked in the IS field. Thus, we contribute to the IS literature by demonstrating the value of the resource-based perspective for investigating the technology effects in the work-life balance domain.

Third, we believe our study is a first study examining dual-earner couples in the WFH context.

Finally, our research design incorporating a diary study of dual-earner couples represents a methodological contribution to WFH studies.

Practical Contributions and Implications

In practice, we provide guidance on technology use in the WFH environment. Organizations and supervisors should be aware of the effects of ICT permeability. Policies and regulations are expected to be implemented to help employees manage family relations and work arrangements. Guidance for a moderate amount of technology use after work hours needs to be monitored and instructed. Moreover, our findings provide evidence for companies that are facing decisions regarding post-COVID-19 WFH policies.

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