

ICT-mediated Interruption: A Comprehensive Review and Future Directions

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Abstract: The emergence of information technology has facilitated communication and collaboration among employees in the modern workplace, but it has also increased the likelihood of interruptions. The persistent nature of such interruptions affects not only employees' mental health and work performance but also broader domains such as team dynamics and work-life conflict. Although a substantial body of research has examined interruptions, the literature remains fragmented, making it difficult to develop a comprehensive understanding of the phenomenon. This article provides a systematic review using the theory-context-method and antecedents-mechanisms-outcomes frameworks. It clarifies the theoretical foundations, research contexts, and methodological approaches related to ICT-mediated work interruptions, and synthesizes their antecedents and consequences. This review concludes by outlining future research directions, emphasizing the need to expand research contexts, improve methodological rigor, examine broader impacts, and conduct cross-disciplinary and cross-cultural comparisons. It also highlights opportunities for developing coping strategies and management practices. This review serves as a useful reference for scholars seeking to initiate or extend research on ICT-mediated interruptions.

Keywords: antecedents-mechanisms-outcomes framework; Information technology; ICT-mediated interruptions; theory-context-method framework.

1. INTRODUCTION

With the development of science, technology, and the digital-intelligence transformation of businesses, various information technologies are increasingly being applied in companies. IT helps employees connect, share information, communicate effectively, and handle work anytime, anywhere (Galluch et al., 2015). On the other hand, IT also increases the risk of work interruptions for employees. The more technology develops, the more diverse the sources of interruptions become. It's not just messages or voice/video calls from social media platforms; employees also have to deal with notifications from network/AI assistants, smart customer services, as well as simultaneous tasks during human-machine interactions. All of these factors disrupt the planned workflow and create work interruptions. Studies show that IT-related work interruptions can affect many aspects of employees, from performance to mental health and their surrounding relationships.

For the reasons above, this study combines two analytical frameworks: Theory-Context-Methodology (TCM) (Paul et al., 2017) and Antecedents-Decisions-Outcomes (ADO) (Paul & Benito, 2017) to review relevant literature, understand the current state of research, and examine the internal mechanisms of IT-induced work interruptions. On one hand, the TCM framework helps organize existing studies from a survey design perspective, clarifying theoretical viewpoints, practical contexts, and technical tools in research on IT-related work interruptions. On the other hand, the ADO framework reveals the causal chain and internal workings of this phenomenon at the micro level. Combining the two frameworks provides a comprehensive grasp of the structure and overall layout of current studies, enabling deeper analysis of the intrinsic mechanisms and the construction of an overall research framework.

Theoretically, the study builds a comprehensive framework. The influencing factors, impact paths and moderating variables, as well as the chain-effect mechanisms and boundary conditions, are all clarified. The effects of IT-induced interruptions on employees' inner psychology, which in turn affect their performance and work behavior, are examined. Scholars can use this as a reference for conducting similar research in the future. In terms of practical value, the study helps managers develop management strategies or propose useful technological features to minimize the negative effects of this phenomenon.

2. RESEARCH OVERVIEW

2.1 Definitions

Work interruption has been a topic of interest for many researchers over the years. Earlier research conducted before 2000 primarily examined the psychological antecedents and consequences of work interruptions, often referring to the notion of "halting and postponing" essential tasks (Zijlstra et al., 1999). More recent investigations have identified some significant characteristics related to the concept of work interruptions: pausing the current task, unpredictability, internal or external drivers of motivation, the intention to return to the task after interruption and distraction (Puranik et al., 2020). Some authors suggest that the introduction of a new task can be seen as an interruption at work, whereas others suggest that such interruptions may or may not lead to a transition to another task. On the other hand, some authors simply point out that it leads to " concurrent or sequential multitasking with a primary task.

Finally, this study considers " Interruptions in work are defined as activities that occur to interrupt the continuity of an ongoing main activity, requiring individuals to divert their attention while also consuming a portion of the worker's cognitive resources. (Jett & George, 2003b, 2003a; Ma et al., 2020; Parke et al., 2018).

Along with the development of information technology in the 21st century, academic research has shifted its focus to IT-related sources. The first type is interruptions caused by technology: for example, system crashes, equipment failures, software bugs, and operational mistakes. The second type is interruption through information technology. These are interruptions caused by others but mediated through information technologies, such as phone calls (Mark et al., 2008), emails (Marulanda-Carter & Jackson, 2012; Tan & Richardson, 2011; ten Brummelhuis et al., 2021), instant messaging tools (Gupta et al., 2013b; Mansi & Levy, 2013; Ou & Davison, 2011), and enterprise social networking platforms (Gibbs et al., 2013; Moqbel & Kock, 2018).

2.2 Classification of ICT-mediated Interruptions

2.2.1 Classifications by sources

Work interruptions caused by phones.

Phones were one of the first technologies used at work. They provide a stable and reliable communication channel, ensuring that information is exchanged in a timely manner. Mobile phones, on the other hand, increase flexibility and efficiency in communication. However, both receiving calls and missing calls can interrupt ongoing work processes. Accordingly, early studies mainly focused on looking at the impact of work interruptions caused by phones on perceived workload (Mark et al., 2008b) and task performance (Grandhi & Jones, 2015).

Work interruptions caused by emails

Compared to phone calls, emails are more formal and have a tighter structure. They also allow long-term storage and access to information. Gradually, they have become the main means of communication and collaboration at work. Email users often accept longer response times since email communication is asynchronous, so people generally tolerate delays in responses. Individuals are also more proactive in controlling the timing and way they handle messages when they have enough cognitive resources (Marulanda-Carter & Jackson, 2012). However, during work, employees can receive emails at any time, and many tend to check and reply to emails immediately, which can cause temporary interruptions in their workflow (Marulanda-Carter & Jackson, 2012). However, during work, employees can receive emails at any time, and many tend to check and respond to emails right away, causing temporary interruptions in their workflow (Marulanda-Carter & Jackson, 2012). Accordingly, previous studies have looked at the impact of email-related interruptions on employees' cognition, emotions, and work performance (Marulanda-Carter & Jackson, 2012; Tan & Richardson, 2011; ten Brummelhuis et al., 2021).

Work interruptions caused by social media

Social media apps such as Facebook, Zalo and enterprise social networks not only offer text messaging and voice/video calls, but also file sharing and group discussions. This significantly enhances communication and collaboration. However, the instant connectivity of these platforms also increases the frequency of interruptions (Gibbs et al., 2013; Galluch et al., 2015b), which in turn have a greater impact on employees' mental state and behavior (Moqbel & Kock, 2018), such as work performance (Moqbel & Kock, 2018).

2.2.2 Classification according to negotiation mechanism of interruptions

Tan & Richardson (2011) classified ICT-mediated interruptions into immediate interruptions and negotiated interruptions. Immediate interruptions are defined as events that require users' immediate attention, forcing them to suspend their primary task, whereas negotiated interruptions allow users to control response timing and potentially postpone handling them to a more convenient moment. Immediate interruptions do not let users delay their responses. Negotiated interruptions give them better control over when to respond. For complex tasks, Immediate interruptions significantly reduce accuracy compared to negotiated ones (Tan & Richardson, 2011). Plus, users say that negotiated interruptions make them feel less interrupted and distracted than instant ones. So, instant interruptions have stronger negative effects, especially in complex problem-solving situations. Negotiated interruptions are an effective way to minimize the impact of interruptions.

2.2.3 Classification based on the relationship with the main task

Addas & Pinsonneault (2015) propose another classification that focuses on the content and the relationship of that content to the main task as well as the broader work context. System intrusions are interruptions caused by the technology system itself (e.g., slow system, frozen computer, system crash, software errors, lost connection). They have no clear content and are completely unrelated to the main task being performed. Informational intrusions, on the other hand, are interruptions that carry one-way information (e.g., emails sent with CC, general notices, irrelevant news). The recipient is not required to respond or take any specific action, just read and process the information at a cognitive level. Actionable intrusions are interruptions like emails requesting unrelated reports or messages asking for help with other tasks. They require some kind of action or exchange of information, even if it's not related to the main task. The recipient has to switch tasks to respond, either through communication or by actually doing something. Informational interventions, on the other hand, carry one-way information that is directly related to the main task. They usually provide feedback or highlight the gap between expected and actual performance. The recipient processes this information at a cognitive level to adjust how they perform the main task, but they are not required to act immediately. Actionable interventions are interruptions that require action or information exchange and are related to the main task. Hybrid interruptions is a mix of intrusion and intervention. They are not related to the main task being worked on at the moment of the interruption, but rather to other tasks in the same project or within that person's project portfolio.

Another simple way to classify interruptions is based on whether they relate to the task: congruent interruptions or incongruent interruptions (Addas & Pinsonneault, 2015, 2018a, 2018b; Cheng et al., 2020). Congruent interruptions are events that directly support or are related to the main task at hand, like an email from a colleague providing needed information for a project. On the other hand, incongruent interruptions do not provide support and usually lead to more distraction, more mistakes, and lower productivity.

2.2.4 Classification based on value orientation

Based on two-factor theory and the context of digital interruptions, (Zhou & Rau, 2023) grouped interruption events into four distinct categories based on the high/low levels of both hedonic value and utilitarian value. Trifles are interruptions with low hedonic and low utilitarian values. These are tasks that neither bring pleasure nor benefit work. Entertainment interruptions have high hedonic value but low utilitarian value. These interruptions bring pleasure and enjoyment (e.g., funny messages, social media) but have no practical value for work. Keys are interruptions that have both high hedonic and high utilitarian value. These are tasks that provide both work benefits and personal satisfaction. In the study, this group appeared in both work and nonwork interruptions, but with lower frequency. Matters are interruptions with high utilitarian value but low hedonic value. Switching to these interruptions offers little emotional benefit, whereas not switching results in significant utilitarian loss (e.g., impact on work performance and missing important information). This group accounts for the highest percentage of work interruptions.

2.2.5 Classification based on work–life boundary context

In addition, some authors choose to focus how technology invades the boundary between work and personal life (Chen & Karahanna, 2018a; Grotto, 2022; Wong et al., 2023). After the COVID-19 pandemic, this type of interruption has become especially common. According to McKendry (2025), on average, an employee now sends or receives over 50 messages outside regular working hours, and by 10 PM, 29% of workers are still checking their inbox. So, instead of categorizing every kind of interruption, this research focuses on interruptions between work and personal life, especially in the context of remote work and the constant connectivity we have nowadays.

2.3 Theoretical foundation

Studies on work interruptions are anchored in a rich theoretical system. Scholars use theories ranging from cognitive psychology and organizational psychology to organizational behavior and human–computer interaction. Current research is based on theories such as the Transactional Theory of Stress, Goal Memory Theory, Long-term Working Memory Theory, Action Regulation Theory, Cognitive Load Theory, and Conservation of Resources Theory. These theories shed light on the mechanisms and pathways through which work interruptions caused by information technology create effects, while together forming the theoretical foundation for research in this field.

2.3.1 The Transactional Theory of Stress

The Transactional Theory of Stress, as articulated by Lazarus and Folkman (1984), emphasizes that stress is not a result of the event itself. Stress arises in the transaction between a person and their environment as the person evaluates the significance of what is happening to them. In this theory, the individual goes through two stages of appraisal in response to a possible stressor (e.g., an interruption): primary appraisal and secondary appraisal. The first concerns whether a given event endangers one's personal goals and interests; the second, how capable one is of coping with the situation. In research on interruptions, scholars use this theory to examine how people react to interruptions and to discover why the same interruption can lead to different reactions. They distinguish between two main types of appraisal: challenge appraisal, when a disruption is seen as an opportunity to promote growth or achieve positive outcomes, and hindrance appraisal, when a disruption is considered an obstacle that drains resources and hinders goal completion. Here the key is how an individual views the interruption as a threat, obstacle, or challenge, which determines whether it results in stress, burnout, or reduced performance (Ma et al., 2020; Galluch et al., 2015; Hurbean et al., 2025). Ma et al. (2020) point out that when employees perceive interruptions as a hindrance, feelings of burnout increase, which in turn indirectly leads to psychological distress and reduced work performance. These studies highlight the central role of subjective appraisal in determining the multidimensional impact of interruptions, while also reinforcing the value of the Transactional Theory of Stress as an important theoretical foundation in this field.

2.3.2 The Conservation of Resources (COR)

The Conservation of Resources (COR) theory focuses on how people accumulate and lose personal resources. The theory is based on the idea that everyone has a limited amount of resources, and the level of these resources directly affects their emotions and performance. When resources are depleted, threatened with depletion, or when the returns on invested resources are not commensurate, individuals experience stress and develop negative emotions, which may in turn lead to ineffective or maladaptive coping responses. From this perspective, work interruptions caused by information technology drain employees' attention and time, triggering negative emotions; managing these emotions afterward also consumes more self-control resources. On top of that, the process of dealing with interruptions and getting back to the main task requires task switching. The process that eats up additional energy and time, leads individuals to face unfavorable psychological effects and negative work behaviors. Based on this theoretical foundation, researchers have explored resource depletion and found that work interruptions increase negative emotional states, such as emotional exhaustion (Cheng et al., 2020), job burnout, physical complaints (Chen & Karahanna, 2018) and job performance (Chen & Karahanna, 2018).

2.3.3 Action Regulation Theory (ART)

Action Regulation Theory (ART) focuses on individuals' self-regulated behaviors, viewing work task performance as a goal-directed and self-regulated process. People adjust their goal-oriented behavior through a series of sequential cognitive stages: setting goals, planning, executing, and monitoring/feedback. This process requires continuous cognitive resources to maintain orderly actions and achieve desired outcomes. For any work task, whether in the planning or execution stage,

individuals actively mobilize cognitive resources and use relevant activity information to adjust their behavior to complete tasks optimally. However, when individuals do not exercise enough self-regulation, their task performance declines. Most studies suggest that ICT-mediated interruptions act as regulatory barriers. They interrupt successive cognitive stages, forcing individuals to hold the current goal, switch to the interrupted task, and then restore the original goal. This process significantly increases cognitive demand and subjective burden, which leads to decreased performance and reduced satisfaction with performance (Pachler et al., 2018). On the other hand, work interruptions can also provide employees with useful information or feedback for the main task, helping them shift into a mindful processing mode. This state can boost employees' self-control motivation, helping them manage their behavior more effectively and thus improve task performance (Addas & Pinsonneault, 2018a). As a result, scholars have also used this theory to look at both the positive and negative impacts of work interruptions on employee performance (Addas & Pinsonneault, 2018a).

2.3.4 *Distraction-Conflict Theory (DCT)*

Researchers have used Distraction-Conflict Theory (DCT) to explain the effects of ICT-mediated interruptions, focusing on the mechanism of attentional conflict and narrowing of cognitive focus. The theory suggests that the presence of interrupting stimulus leads to a competition for the individual's limited attention resources between the main task and the interruptive task. This process creates attentional conflict that affects the individual's cognitive processing capabilities and task performance. Interruptions like instant message pop-ups, social media notifications and other disturbances distract the attention of employees, break their concentration on the main tasks, and disrupt the work. This theory is supported by the research of some researchers who found that instant messaging and IT interruptions are highly dependent on the complexity of the primary task: for simple tasks the interruptions can help improve the time of completion and sometimes even increase accuracy, but for complex tasks the interruptions significantly reduce quality and increase the time of processing (Speier et al., 1997, 2003; Mansi & Levy, 2013). Other findings also suggest that frequent interruptions, especially if the content is dissimilar to the primary task, can lead to a decrease in performance and an increase in perceived mental overload (Speier et al., 1997; Gupta et al., 2013).

2.3.5 *The Memory for Goals Theory (MFG)*

The Memory for Goals Theory (MFG) focuses on the activation level of goal memory, suggesting that a person's memory of goals can fade or become hard to activate over time, while past experiences and environmental cues can help a person restart or reactivate memories of previous task goals. From this, we can see that employees' recovery delays during work interruptions usually stem from the fading of main task goals in memory or a decrease in activation levels. The longer the recovery delay, the more negative the impact on main task performance (Altmann & Trafton, 2002). Individuals can reduce memory decay and shorten recovery delays by shortening interruption durations and doing prospective rehearsal or note-taking during the interruption, helping them get back to their main tasks more effectively. Based on MFG theory, studies have shown that how active the main task goal is in memory is affected by the duration and complexity of interrupting tasks, sensory channels, timing of interruptions, and the presence of supporting cues. It in turn influences recovery time, error rates, and performance quality (Monk et al., 2008; Lee et al., 2018). Moreover, research also shows that interruptions increase cognitive load and reduce performance, especially when workers are tired or have limited working memory capacity. However, factors such as consistent handling strategies and contextual cues can help protect goals from losing activation. Thereby they can ease the negative impact of interruptions (Chen et al., 2021).

3. RESEARCH METHODS

3.1 *Quantitative Method*

The quantitative method is an approach used by most studies. These methods are used to test causal or correlational relationships between work interruptions and performance and psychological states. Quantitative designs are very diverse, with the most notable being:

Laboratory experiment: This allows for tight control over the frequency, content, timing of interruptions, and type of main task, which makes it possible to isolate the pure effect of interruptions on accuracy, completion time, cognitive load, and emotions. This method is widely used in foundational studies (Basoglu et al., 2009; Gupta et al., 2013; Mark et al., 2008). Some experiments also combine EEG measurements to capture the neural mechanisms behind working memory decline due to interruptions (Chen et al., 2021, 2023).

Cross-sectional survey: Often used to test complex theoretical models with many mediating and moderating variables, like interruption overload, burnout, or deviant behavior. Data is collected through online questionnaires and analyzed using PLS-SEM or SEM (Hurbean et al., 2025; Wong et al., 2023).

Daily diary/experience sampling method (ESM): Recording fluctuations and psychological or performance indicators within individuals over multiple days, helping to capture immediate and cumulative effects. The data is analyzed using multilevel modeling to separate within-person and between-person effects (Puranik et al., 2021; Ma et al., 2020; Parke et al., 2018; Ten Brummelhuis et al., 2021)

Longitudinal survey: Repeated surveys over time to check the long-term causal relationship between disruptions and mental health, deviant behavior, or satisfaction (Khalid et al., 2022, 2023).

Field experiment: Intervening in the actual work environment (for example, blocking notifications) to assess the impact on stress and performance (Ohly & Bastin, 2023).

Data analysis: The main quantitative techniques include regression analysis, structural equation modeling (SEM/PLS-SEM), analysis of variance (ANOVA), and multilevel/mixed linear models. SEM is used to simultaneously test mediation paths such as interruption overload, psychological switching, or resource depletion (Chen & Karahanna, 2018; Galluch et al., 2015; Cheng et al., 2020; Addas & Pinsonneault, 2018). Multilevel models handle diary data with a nested structure (day within person) (Puranik et al., 2021; Ma et al., 2020). Regression and ANOVA analyses focus on comparing means between interruption/no-interruption conditions, assessing direct impacts on time, errors, and emotions (Mark et al., 2008; Speier et al., 2003).

3.2 Qualitative Method

Nowadays, some scholars also use qualitative research methods to carry out related studies. Collecting qualitative data helps record the experiences of research subjects in real work environments, thereby providing a richer and more diverse source of data. Accordingly, some researchers use diary methods and semi-structured interviews to gather in-depth information.

Semi-structured interviews: A key tool for understanding how employees perceive, classify, and react to different types of interruptions. Chen & Karahanna (2018) interviewed 16 knowledge workers to develop a scale for interruption overload and psychological switching. Addas & Pinsonneault (2015) combined interviews with event diaries to build a taxonomy of IT interruptions. Grotto (2022) used the Event Reconstruction Method through interviews to model after-hours interruption processes.

Case studies and field observations: Sykes (2011) conducted a qualitative case study, directly observing staff to quantify lost time due to interruptions and noting frustrated reactions. Kirmeyer (1988) used field observations with service employees to analyze the link between interruptions and feelings of overload.

The study applies an inductive analysis approach so that natural theoretical themes emerge from actual data rather than being forced by pre-existing theoretical frameworks. To implement this approach, coding techniques are used as the main tools, including open coding to identify raw units of meaning, focused coding to group them into thematic clusters, and content analysis to systematize and measure the frequency of these themes in the context of work disruptions caused by IT.

3.3 Mixed methods

A few studies combine both methods to both explore phenomena and test hypotheses. For example, Chen and Karahanna (2018) first conducted qualitative interviews to understand the types of interruptions and their mechanisms, then developed a measurement scale and surveyed 237 employees, analyzing the structural equation model to test the theoretical model. Similarly, Cheng et al. (2020) conducted 20 semi-structured interviews to explore types of interruptions and psychological consequences, then surveyed 345 workers using PLS-SEM to confirm the relationships between interruptions, overload, and emotional exhaustion. Such sequential designs help enhance the reliability and comprehensiveness of research findings.

4. ANTECEDENTS OF ICT-MEDIATED WORK INTERRUPTIONS

The factors that cause ICT-mediated work interruption mainly come from the explosion of various communication channels and devices, making employees constantly switch between multiple tools and deal with fragmented work (Wajcman & Rose, 2011). These factors can be grouped into four main categories: technology characteristics, social pressures and organizational expectations, individual usage behavior, and content/context characteristics.

In terms of technology features, visual and sound notification mechanisms like pop-up windows, blinking icons, or chimes grab immediate attention in a way that's hard to ignore, and the timing of their appearance is beyond the recipient's control (Wajcman & Rose, 2011; Ou & Davison, 2011). The synchronicity of tools like instant messaging or social media demands instant responses, keeping people constantly on alert (Liu et al., 2022; Ou & Davison, 2011), while polychronic communication allows multiple simultaneous conversations, which fragments attention (Ou & Davison, 2011). The richness of nonverbal signals (emoji, images) can also be distracting and requires extra cognitive effort to interpret (Liu et al., 2022; Fonner & Roloff, 2012). The mobility of devices removes spatial-temporal barriers, allowing interruptions to happen anytime, anywhere (Liu et al., 2022), while the storage and persistent presence of inboxes (voicemail, inbox) create constant reminders that need to be dealt with (Wajcman & Rose, 2011).

Besides technological features, social pressures and organizational expectations are also major sources of disruption: the norm of quick responses and the expectation to be constantly available force employees to interrupt their current work to reply at any time, while the hierarchy of urgency between different channels (for example, mobile calls being seen as more important) forces them to prioritize responding (Wajcman & Rose, 2011; Ten Brummelhuis et al., 2021).

On the individual behavior side, using IT for personal purposes during work hours such as private texting, social media, or entertainment directly distracts attention and creates cross-role interruptions. Juggling multiple communication channels and being quick and readily available for responses actually encourages colleagues to reach out more, creating a spiral of increasing interruptions (Ten Brummelhuis et al., 2021). Moreover, not actively disconnecting and managing one's availability makes employees even more vulnerable to interruptions, and even strategies that seem to control interruptions (like checking emails on your phone beforehand) actually prolong connectivity and extend the time spent being interrupted (Wajcman & Rose, 2011).

Finally, the content and context features also play an important role: unscheduled interactions not initiated by the recipient (Ten Brummelhuis et al., 2021), role-crossing interruptions with high cognitive switching costs (Derks et al., 2021), along with negative content, all make the feeling of being disturbed and interrupted even worse (Derks et al., 2021).

5. CONSEQUENCES OF ICT-MEDIATED INTERRUPTIONS

5.1 Behavioral Effects of ICT-Mediated Interruptions

Many studies have shown that ICT-mediated interruptions reduce individual performance through factors like longer task completion times, more errors, and increased subjective workload and cognitive overload.

Interruptions make the main task take longer because of switch costs, resumption lag, and having to relearn forgotten parts of the task (Monk et al., 2008; Lee & Duffy, 2015). Many experiments show that completing the main task can take 3% to 27% longer when interrupted by secondary tasks (Bailey & Konstan, 2006). In particular, the recovery time is the main factor that extends completion time, rather than the time spent on the interrupted task itself. This effect is especially noticeable with tasks that have a high cognitive load or are complex (Mansi & Levy, 2013; Speier et al., 1997, 2003). The core reason for this delay is the cost of task switching.

Interruptions also reduce the accuracy and quality of decisions. When someone has to constantly switch between their main tasks and interruptions, their attention and working memory get drained, leading to goal forgetting and decreased processing efficiency (Addas & Pinsonneault, 2018a; Tams et al., 2018). Many experiments confirmed that interruptions increase error rates, reduce the accuracy of working memory and decision-making, especially when the tasks are complex or the interruption comes from an unrelated source (Bailey & Konstan, 2006; Tan & Richardson, 2011; Speier et al., 1997, 2003). Instant interruptions (IM) and interruptions from supervisors make this effect even worse (Tan & Richardson, 2011; Gupta et al., 2013).

ICT-mediated interruptions increase the subjective workload, causing cognitive overload, which in turn narrows attention and impairs working memory (Mark et al., 2008; Basoglu et al., 2009; Addas & Pinsonneault, 2018). As a result, workers are more likely to forget unfinished tasks, disrupt their flow, and reduce self-regulation effectiveness (Parke et al., 2018). Interruption overload is also an important mediating mechanism leading to exhaustion and reduced performance both at work and outside of work (Chen & Karahanna, 2018; Khalid et al., 2023;).

Although less common, some studies suggest that under certain conditions, interruptions can be beneficial or at least not entirely harmful. They can help improve speed on simple tasks or through effort compensation. In monotonous, simple tasks, interruptions can narrow focus on important cues, helping speed up processing while still maintaining quality (Speier et al., 1997, 2003; Mansi & Levy, 2013). The overcompensation effect shows that people who are interrupted may work faster, although at the cost of higher mental effort and negative emotions (Mark et al., 2008; Chen et al., 2021). Quick, fragmented interruptions might also be less harmful compared to slow, sudden ones.

Besides, congruent interruptions support performance and learning. When the interrupted content is relevant to the main task, it can provide useful information, boost mindfulness, and help get the work done more efficiently, even improving quality and learning (Addas & Pinsonneault, 2018; Addas & Pinsonneault, 2015). These interruptions don't break your flow and even tend to increase action-cognition integration (Nadj et al., 2023). At the group level, congruent interruptions can trigger problem-solving coordination, which in turn improves collective performance (Addas & Pinsonneault, 2018).

Not only that, interruptions also bring benefits from finishing leftover tasks. Task closure helps reduce burnout and negative deviant behaviors, while giving a sense of richness and accomplishment (Chen & Karahanna, 2018; Khalid et al., 2023; Grotto, 2022). However, this positive effect is usually not strong enough to fully offset the overall negative consequences (Chen & Karahanna, 2018; Grotto, 2022).

Another positive effect of interruptions is that they can prevent deadlocks and boost responsiveness. In creative tasks, interruptions can help reduce the number of impasses compared to working continuously. Also, quick responses to messages increase the feeling of task completion and positive emotions, creating an indirect beneficial path (Sonnentag et al., 2018).

5.2 Psychological Well-being Effects of ICT-Mediated Interruptions

During moments of interruption, workers go through noticeable negative emotions like annoyance, frustration, disappointment, anxiety, and a feeling of cognitive overload (Mark et al., 2008; Galluch et al., 2015). Unwanted interruptions increase time pressure, drain self-regulatory resources which in turn intensifies negative emotional states (Sonnentag et al., 2018; Mark et al., 2008). Interruption overload and psychological transition are mediating mechanisms, predicting an increase in both work-related and non-work-related exhaustion, as well as emotional burnout (Chen & Karahanna, 2018; Cheng et al., 2020; Wong et al., 2023; Khalid et al., 2023).

Moreover, the negative impacts of interruptions are mirrored in a decline in satisfaction with one's own performance and the perception of task completion both on a daily basis and in the long run; (Pachler et al., 2018; ; Sonnentag et al., 2018;). Interruptions consume resources and interfere with progress toward goals, leading to employees feeling less effective and less content with their work (Puranik et al., 2021). Compensatory procedures may lead to maintenance or even increase of production but clearly compromise comfort and good sensations (Mark et al., 2008).

ICT-enabled cross-domain interruptions, i.e., work intrudes into family life or vice versa, also represent a distinct source of emotional tension, namely work-family conflict (Hunter et al., 2019; Tams et al., 2020; Khalid et al., 2022). Tams et al. (2020) point out that ICT-enabled interruptions outside work hours place employees in a situation where they need to choose between meeting work demands and fulfilling personal responsibilities, thus creating conflict and resulting in psychological strain. These negative emotional reactions affect not only the focal individual, but also spill over to close others (e.g., spouses) to produce interpersonal strain (Grotto, 2022).

A positive side of work interruptions is that they can meet employees' need for social connection. Chat with your colleagues or friends sometimes can give them a little break. The social interaction that occurs in these interruptions can give you a sense of belonging to a team. This can not only increase employee satisfaction with their work but also possibly improve their performance (Puranik et al., 2021; Ma & Zhang, 2025). Furthermore, feeling connected with coworkers also acts as a psychological buffer that helps in reducing the negative effect of resource depletion on job satisfaction (Puranik et al., 2021).

In some instances interruption can be viewed positively when it facilitates goal achievement in the other domain. For example, work interruption during working hours can enable people to deal with family issues in time, which can give rise to positive emotions (Hunter et al., 2019).

Work-related interruptions also sometimes provide employees an opportunity to complete unfinished tasks. This can help to decrease burnout feelings and to limit negative deviant behaviours at work (Chen & Karahanna, 2018; Khalid et al., 2023). Likewise, a fast response to messages or work requests can also raise the feeling of task completion and indirectly enhance positive feelings (Sonnentag et al., 2018).

Hedonic interruptions, like fun or relaxing ones, give a person's mood a short-term immediate lift. They can also help in recovering energy and reducing fatigue at the end of the day, especially when they happen during breaks (Zhou & Rau, 2023). However, these benefits should be considered in context, as if these interruptions occur frequently in the work, they could become a source of burnout over time (Zhou & Rau, 2023).

6. BOUNDARY CONDITIONS OF ICT-MEDIATED INTERRUPTION EFFECTS

6.1 Task Characteristics

Prior studies demonstrated that the effects of work interruptions are not uniform but vary considerably depending on contextual and individual conditions. In some cases, interruptions can hinder performance and increase stress, while in others they may have little influence or even provide certain benefits. The differences are because the results of interruptions depend on specific conditions, such as the characteristics of the individual, the nature of the task, the type of interruption and how they are managed by individuals. Thus, in aiming to better understand work interruptions, it is important to study these aspects as boundary conditions that determine the overall impact of work interruptions.

Task complexity and the compatibility between the primary task and interruptions play an important role in determining the effects of work interruptions.

First, task complexity is one of the most frequently examined moderating variables. For simple tasks with low cognitive demands, interruptions may not be harmful and can even improve speed and accuracy by narrowing attention to key cues (Speier et al., 1997, 2003; Mansi & Levy, 2013). In contrast, when the primary task is complex, interruptions tend to increase completion time, raise error rates, and reduce work quality. This effect is also influenced by information format, as graphical representations can help buffer the negative impact of interruptions on complex symbolic tasks (Speier et al., 1997, 2003).

Second, the kind of primary task and interruption matters, too. In particular, when the main task is cognitive the frequency of interruption significantly affects the quality of the performance, with a higher rate of errors. In contrast, interruption frequency does not have a statistically significant effect on performance quality, for skill-based or manual tasks (Lee & Duffy, 2015).

Third, the sequence of task execution is another factor to consider. Completing simpler tasks before moving on to more complex ones can reduce cognitive load when interruptions occur, thereby mitigating their negative effects (Basoglu et al., 2009).

6.2 Interruption Characteristics

Beyond the characteristics of the primary task, interruptions themselves also possess objective attributes that can directly influence task performance.

One commonly examined factor is interruption frequency. Higher frequency has been associated with increased completion time, error rates, cognitive load, and stress levels (Speier et al., 1997; Basoglu et al., 2009; Lee & Duffy, 2015; Mark et al., 2008). In addition, frequent interruptions may also increase individuals' perceived workload (Gupta et al., 2013).

In addition, interruption duration has been suggested to relate to task performance. Longer interruptions can reduce the activation level of the primary task goal in memory, thereby increasing the time required to resume the task (Monk et al., 2008). This effect is particularly pronounced when the interrupting task involves high cognitive demands.

The third characteristic is the timing of interruptions. As cognitive load is relatively lower at these transition points. Interruptions that occur at natural transition points between subtasks tend to be less disruptive than those that occur mid-task. (Adamczyk & Bailey, 2004).

The source of interruptions is another aspect that has received research attention. Self-initiated interruptions are studied as providing a greater sense of control. So they are generally associated with lower stress levels compared to externally imposed interruptions (Khalid et al., 2022). In contrast, interruptions from supervisors may increase pressure and potential declines in work quality (Gupta et al., 2013). Finally, the modality of interruptions also affects the level of interference. Interruptions delivered through a different sensory channel than the primary task (e.g., auditory vs. visual) tend to create less conflict than those that rely on the same channel.

6.3 Task-Interruption Fit

Beyond individual characteristics, the effects of interruptions also depend strongly on the degree of fit between the primary task and the interrupting task.

At the structural level, the similarity between the two tasks determines the extent of competition for cognitive resources. The two tasks are more likely to compete for the same cognitive resources when they are highly similar, especially in case of high time pressure, which increases error rates significantly. However, when tasks are dissimilar, e.g. one task is cognitive and the other is skill-based, resource competition is reduced which can improve processing efficiency and even reduce completion time (Lee & Duffy, 2015; Lee et al., 2018).

At the semantic level, content congruence which denotes the extent to which the interruption's content is align with the objectives of the primary task has been investigated. Congruent interruptions, which are relevant and related to the focal task, may be less disruptive or even facilitate task resumption by maintaining goal continuity (Monk et al., 2008; Altmann & Trafton, 2002, Addas & Pinsonneault, 2018). In contrast, incongruent interruptions introduce unrelated information, increasing cognitive switching costs and disrupting mental representations, thereby exacerbating performance decline (Addas & Pinsonneault, 2018).

6.4 Individual characteristics

Individual differences are also considered moderators that influence how individuals respond to and adapt to workplace interruptions. Scholars found that certain features can mitigate the detrimental consequences of interruptions by lowering cognitive burden, enhancing perceived control, or aiding post-interruption recovery. Specifically, a preference for multitasking and strong time management skills can reduce perceived task hindrance and stress (Pachler et al., 2018; Ma et al., 2020). Higher cognitive ability and the use of consistent work strategies are also associated with lower error rates and faster recovery after interruptions (Bai et al., 2014). In addition, technology-related factors such as computer experience, computer self-efficacy, and interruption management ability can reduce cognitive load and psychological strain (Basoglu et al., 2009). Work experience and familiarity with interruptions further support adaptation and performance maintenance (Zijlstra et al., 1999). Finally, certain personality traits, such as openness to experience, need for personal structure, and a preference for multitasking, may help reduce time costs and levels of interruption-related burnout (Mark et al., 2008; Zhou & Rau, 2023).

In contrast, some individual characteristics may amplify the negative effects of interruptions. Age has been associated with declines in working memory, making individuals more susceptible to disruption when interruptions occur (Clapp & Gazzaley, 2012). Factors such as social media dependency, fear of missing out (FoMO), and telepressure (i.e., the pressure to respond quickly) can also intensify the negative impact of interruptions on performance (Liu et al., 2022). In addition, mental fatigue weakens the ability to recover performance after interruptions (Chen et al., 2021, 2023).

7. FUTURE RESEARCH

In future research, scholars should move beyond simple categorizations of interruptions to better capture the complexity of modern work environments. Rather than focusing solely on dichotomies such as congruent versus incongruent or immediate versus negotiated interruptions, future studies should examine the interaction among multiple concurrent sources of interruptions (e.g., email, messaging, coworkers, and social media), their accumulation over time, and cross-boundary interruptions between work and personal life in the context of increasingly prevalent remote work.

In addition, further research is needed to deepen the understanding of underlying psychophysiological mechanisms through objective measurement approaches. Integrating physiological indicators (e.g., EEG, pupil dilation, heart rate variability) with behavioral and self-report data can help clarify the processes related to cognitive load, working memory, and post-interruption recovery. At the same time, research should move beyond laboratory settings toward real-world contexts by incorporating behavioral log data (e.g., computer logs, app interactions) and wearable devices to measure interruptions and their effects more continuously and accurately.

Moreover, longitudinal research designs are necessary to better understand adaptation processes and the cumulative consequences of interruptions, including burnout, job satisfaction, and mental health outcomes. At a higher level, future studies should also extend the focus to team and organizational levels in order to examine the spillover effects of interruptions on collective performance.

Furthermore, cross-cultural and cross-industry comparative studies can help clarify the moderating role of contextual factors in shaping the impact of interruptions. In parallel, more intervention-based research is needed to evaluate the effectiveness of practical solutions, such as intelligent notification systems, interruption management training, and organizational policies (e.g., “quiet time”).

Finally, the emergence of new technologies such as generative artificial intelligence and virtual assistants is introducing new forms of interruptions. Future research should focus on how to design these technologies in ways that support performance without increasing cognitive overload or negatively affecting users’ mental well-being.

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