Is Information Technology Solely to Blame?
The Influence of Work-home Conflict Dimensions on Work Exhaustion

Completed Research Paper

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Abstract

Using information technology (IT) can blur the boundaries between work and private life and contribute to an IT-based work-home conflict (WHC). Organizations and governments treat IT usage as the main source of WHC and have implemented laws and policies to restrict access to IT to reduce WHC. In this paper, we investigate the effect of IT usage-related and work-based dimensions of WHC: time-, strain-, and behavior-based WHC. Understanding the dimensions of WHC can help organizations and governments move beyond IS usage restrictions to identify and prevent the negative consequences of each dimension for employees, such as work exhaustion. We distinguish IT- from work-based dimensions and theorize their effect on work exhaustion. The results of a study of 542 employees show that the IT-based dimension of WHC only indirectly influences work exhaustion, whereas time- and strain-based WHC contribute significantly and directly to work exhaustion. Implications for research and practice are suggested.

Keywords: work-home conflict, work-family conflict, work exhaustion, role conflict, blurring of boundaries, teleworking
Introduction

Using information technology (IT) blurs the boundaries between work and private life, which reflects a conflict between an employee’s work and private role (Ayyagari et al. 2011; Köffer et al. 2014; Turel et al. 2011a). This conflict is common when employees expect their employees to use IT to stay connected with their work in order to meet deadlines and demands. At the same time, employees also use IT to fulfill private duties in their private role. Thus, IT-based work-home conflict (WHC) is a role conflict resulting when individuals cannot fulfill their private role duties because they are compelled to use a work-related pervasive IT (e.g., using mobile email instead of dining with the family; Turel et al. 2011a).

To address this conflict, many organizations have implemented policies restricting IT usage designed to reduce IT-based and other types of WHC, such as by only allowing enabling employees to receive emails during their working hours and 30 minutes before and after their shift (de Castella 2014). For example, Volkswagen turns off Blackberry email access after work hours (bbc.com 2012) and France passes a law which banned employees from checking work emails after 6 pm (The Economist 2014) to reduce the blurring of work and private life. Circumstantial evidence indicates that most laws and organizational policies focus on IT to reduce WHC and employee work exhaustion and that IT usage is considered a primary source and symbol of WHC.

In this paper, we draw on psychological research to theorize that the conflict between work and private life has causes beyond IT usage. This paper identifies and differentiates between time-, strain- and behavior-based WHCs. Time-based WHC results when different roles, such as the work and private role, compete for an employee’s time or when job demands exceed an employee’s resources and prevent them from investing as much energy into their private life as they would like. This depletion perceived in the work role creates strain that makes it difficult for employees to fulfill their private role duties, which leads to strain-based WHC. Finally, when the work role requires different behavioral patterns than the private role, a conflict between work and private arise. For example, an authoritarian interaction style might be effective in a work role, but ineffective in the private one. When certain behaviors in the work role are incompatible with the duties within the private role, behavior-based WHC can arise (Carlson et al. 2000; Greenhaus and Beutell 1985). WHC is thus rooted not only in IT usage, but also in additional characteristics of the job. Each of these WHC dimension can lead to negative consequences for the employees, such as work exhaustion (Ahuja et al. 2007; Ferguson et al. 2016).

Prior research on WHC in the workplace has focused either only on the techno level, which assumes that WHC is based on IT usage (Ayyagari et al. 2011; Köffer et al. 2015; Turel et al. 2011a) or only at the work-level, which assumes that WHC results when the role pressure at work is incompatible with duties in the private role (Greenhaus and Beutell 1985). To date, the simultaneous influence of work- and IT-related WHC on employees’ work exhaustion has been neglected in the literature. In practice, organizations focusing on IT-based WHC to reduce employees' work exhaustion, for example, by turning off e-mail servers after work hours may be ignoring the work dimensions of WHC. In order to prevent work exhaustion effectively, organizations need a comprehensive understanding of WHC and its impact on work exhaustion. To address this gap in the literature, the present research focuses on WHC by identifying and various IT- and work-based dimensions and comparing the degree to which they influence work exhaustion to assess the effect of actions taken by organizations and governments. Thus, our overall research question is:

*How do the different dimensions of work-home conflict influence work exhaustion?*

To answer this research question we develop and validate a research model which investigates WHC on a techno level (Köffer et al. 2014; Sarker et al. 2012; Turel et al. 2011a) and on a work-level (Ahuja et al. 2007; Greenhaus and Beutell 1985; Sarker et al. 2010). We thus take a closer look at the WHC construct by considering its various dimensions. Our results contribute to the literature by illustrating that the IT-based dimension of WHC does not significantly influence work exhaustion, whereas time-based WHC and strain-based WHC are the main factors contributing to work exhaustion. The present study reveals that IT-based WHC is an antecedent of the work-based dimension of WHC and only indirectly influences work exhaustion.

The remainder of this paper is organized as follows. First we provide the theoretical background of our study by explaining the role conflict theory, outlining past literature on WHC and demonstrating its multidimensionality. Subsequently, we develop our research model and explain our methodology before
presenting and our results. Lastly, we discuss the findings and draw implications of the present research for theory and practice.

**Theoretical Background**

In this section, we outline the role conflict theory, discuss the state of WHC literature, and illustrate that WHC is multidimensional.

**Role Conflict Theory**

A role is a unique set of behaviors, requirements, responsibilities, and even identities (Ashforth 2001; Madsen and Hammond 2005). Individuals adopt several roles: they act as managers at work, as mothers or fathers in the family, as volunteers in social projects, as members of a spiritual community, or as a partner or friend in romantic and platonic relationships. Each role has its own objectives, beliefs, values, norms, interaction styles, and time horizon (Ashforth 2001, 2001; Sundaramurthy and Kreiner 2008). Individuals take on an entire assortment of roles rather play only in one role at a given time (Madsen and Hammond 2005).

As individuals occupy more than one role, the different roles intersect with each other and sometimes one role impedes an individual’s ability to accomplish the duties required by another role. The conflict between the different roles occurs because (1) the expectations and duties within one role are incompatible, or (2) the duties of one role are incompatible with the duties of another role (Koch et al. 2012). In some cases, different roles may cause personal conflicts which make it more difficult to perform each role successfully due to conflicting demands on time, lack of energy, or incompatible behaviors among roles (Grandey and Cropanzano 1999). Role conflict theory claims that when employees struggle within or between different roles, this results in an undesirable state (Grandey and Cropanzano 1999). Such role conflict can reduce job satisfaction, the employees’ sense of commitment to the organization, and her productivity (Igbaria and Guimaraes 1993; Tarafdar et al. 2007) and can foster work exhaustion and even burnout (Moore 2000a).

In summary, employees perform several roles each containing unique set of behaviors, requirements, responsibilities, and even identities. Performance multiple roles simultaneously can result in an interruption of the different roles. If the expectations and duties within or between roles are not compatible, a conflict between various role may arise, which may lead to negative consequences for the individual. In the case of WHC, this may take the form of work exhaustion.

**Work-Home Conflict**

Role expectations at work and in private life are not always compatible, which can result in conflicts between work and private life (Netemeyer et al. 1996). WHC occurs because the role pressure from the work role is incompatible with duties in the private role (Greenhaus and Beutell 1985). In the following section, we provide an overview of IS research into WHC and then explain the multidimensionality of WHC.

**Related IS Research on Work-home Conflict**

The conflict between work and private life has been investigated in several contexts within the IS discipline (for a detailed review see Köffer et al. 2015). Various examinations focus on WHC among IS professionals (Ahuja et al. 2007; Armstrong et al. 2015; Sarker et al. 2010; Weinert et al. 2014). An early examination by Ahuja et al. (2007) theorizes that WHC is a crucial factor by considering work exhaustion and turnover intention. They assume that WHC influences work exhaustion and organizational commitment and indirectly turnover intention. Their findings indicate that WHC is one factor that influences organizational commitment and work exhaustion as well as it indirectly influences the turnover intention of IT personnel as the major contributor to work exhaustion. The following investigation based on the research model by Ahuja et al. (2007) focuses on IS career experience and considers career-family conflict an antecedent of work exhaustion. However, in this context, the results demonstrate that career-family conflict has no effect of work exhaustion related to IS career experiences (Armstrong et al. 2015). An additional study investigates the antecedent of WHC among IT professionals in globally distributed systems development teams. The examination assumes that time difference, the frequency of communication, and the number of distributed locations influence WHC. The findings indicate that all three antecedents have a significant effect on WHC in this context (Sarker et al. 2010).
Several investigations in the context of WHC concentrate on IT use in general. An early investigation examines the differences of WHC between after-hours telecommuters and core working-hours telecommuters (Duxbury et al. 1992). Their findings indicate that gender and after-hour telecommuting significantly influences WHC. They also compare different work arrangements (dual-career vs. traditional-career) and gender (men vs. women) and find intra- and inter-group differences (Duxbury et al. 1992). Other studies have considered the role of technology characteristics in WHC and have investigated WHC as an antecedent of IT-based exhaustion. For example, Ayyagari et al. (2011) focused on technology characteristics which influence IT-based WHC, which in turn influences IT-based exhaustion. Their results show that presentism positively influences WHC and that WHC influences among others IT-based exhaustion. They find that IT-based WHC can also result when employees use the same technology for work and private life. The increasingly common practice of employees using their privately-owned IT instead of the enterprise IT also blurs the boundaries between work and private (Köffer et al. 2015; 2015). In the context of teleworking, WHC influences exhaustion and in turn intentions to continue teleworking (Weinert et al. 2015a). This practitioner-oriented examination demonstrated that using mobile devices can influence WHC. The scholars develop a framework of different perceptions on WHC and propose a set of managing strategies, identifying three different WHC perceptions: one which separates work and private life, one which views work as overlapping with private life, and a last which perceives this domain as integrated (Sarker et al. 2012). Turel et al. (2011a) indicate that technology addiction is one cause of IT-based WHC, which in turn influences WHC.

In sum, several investigations have focused on WHC in various contexts. The antecedents and consequences of WHC have been investigated at the techno and work level. The findings of past studies indicate that WHC, either on a techno level or on work level, results in negative consequences such as reduced satisfaction or work exhaustion. However, almost all investigations treat WHC as a unidimensional construct and neglect its multidimensionality. The following section discusses the multidimensional nature of WHC.

The Multidimensionality of Work-home Conflict

Past literature (Carlson et al. 2000; Greenhaus and Beutell 1985) outlines a deeper and more specific understanding of various work-based dimensions of WHC: time-based WHC, strain-based WHC, and behavior-based WHC. In addition, IS research proposes an IT dimension of WHC. Consequently, we argue that WHC contains several different dimensions which are described in the following and depicted in Figure 1 in the WHC box.

**IT-based WHC** is the discord between the professional and private role related to IT use (Ayyagari et al. 2011; Köffer et al. 2015), such as when constant connectivity via IT for professional purposes blurs work-private boundaries (Mann and Holdsworth 2003). IT devices such as laptops and cell phones in combination with broadband connections are blurring the boundaries between work and private by providing increased access to work from private spaces (Ayyagari et al. 2011; Sarker et al. 2012). In addition, the usage of consumer IT such as private smartphones at work increases the blurring of work and private roles (Köffer et al. 2014; 2015). IT-based WHC occurs when the duties required by the private role cannot be fulfilled because of the usage of a specific work-based pervasive technology (e.g., not being able to dine with the family because of pressure to read and compose mobile work e-mails at home (Turel et al. 2011a)).

**Time-based WHC** occurs when the time spent in the work role makes it difficult to participate in the private role (Carlson et al. 2000). This dimension of WHC considers the conflict of employee’s time within different roles. For example, the time spent on work-based activities within the work role cannot be devoted to activities within the private role. Time-based WHC contains the time pressures within the work role, which make it physically difficult to fulfill the duties arising from the private role. The pressure might lead to a preoccupation within the work role even through an employee is physically trying to meet the demands of another role. This dimension of WHC is based on working hours, the frequency of overtime, and the presence and irregularity of shiftwork (Greenhaus and Beutell 1985; Netemeyer et al. 1996).

**Strain-based WHC** occurs when the burden of the work role affects activities in the private role (Carlson et al. 2000). This conflict occurs when strain symptoms such as tension, anxiety, or fatigue in the work role influence the performance of an employee in the private role. The professional and private role are incompatible because the demands of the work role make it difficult to meet the duties of the private role (Greenhaus and Beutell 1985; Netemeyer et al. 1996).
Behavior-based WHC arises when the behavior in the work role affects the behavior in the private role (Carlson et al. 2000). Specific behavior within the work role might be inconsistent with expectations regarding behavior in the private role. For example, a manager should be independent, emotionally stable, aggressive, and objective in his job role, whereas in the private role he should be warm, nurturing emotionally available, and vulnerable. If an employee is unable to adjust their behavior to meet the behavioral expectations of the work and private role, behavioral-based WHC might occur (Greenhaus and Beutell 1985).

In the following, we develop a research model to analyze the influence of these four dimensions on employees' work exhaustion.

**Research Model**

In this section, we develop our research model. As shown above, previous literature indicates that antecedents and consequences of WHC have been investigated on a techno and work level (Maier et al. 2015a). The techno level considers the effects regarding IT usage containing the IT-based dimension of WHC and considering IT-based consequences such as IT-based exhaustion (Ayyagari et al. 2011), whereas the work level encompasses the three work dimensions of WHC (Carlson et al. 2000) and considers consequences of WHC based in work processes such as work exhaustion (Ferguson et al. 2016; Moore 2000a). IS literature suggests that the techno level also has an impact on the work level (Maier et al. 2015a).

Therefore, our model builds on past literature (Maier et al. 2015a) and distinguishes between a techno level and a work level. On the work level, we argue that the work-based WHC dimensions (time-based, strain-based, behavior-based WHC) have an influence on work exhaustion. On the techno level, we assume in line with Ayyagari et al. (2011) that IT-based WHC influences IT-based exhaustion. Afterward, the impact of the techno level on the work level is theorized.
The Work Level: The Influence of the Work Dimensions of WHC on Work Exhaustion

In the following, we focus on the work level by hypothesizing the influence of the work dimensions of WHC on work exhaustion. Work exhaustion includes emotional exhaustion at the job and is besides depersonalization and diminished personal accomplishment a component of job burnout (Maslach 1993; Maslach et al. 2001; Maslach and Jackson 1981). Work exhaustion results from the sense of tension and frustration because employees fear that they will not be able to perform as well as previously (Swider and Zimmerman 2010). The symptoms of work exhaustion include tension and depletion of one’s emotional and physical resources (Maslach et al. 2001). Work exhaustion is the central component of job burnout (Maslach et al. 2001) and has been considered several times in management and IS literature (Ahuja et al. 2007, Moore 2000a, 2000b; Rutner et al. 2008; Weinert et al. 2015b). As the literature indicates that WHC consists out of three different dimensions: time-based WHC, strain-based WHC, and behavior-based WHC (Carlson et al. 2000; Greenhaus and Beutell 1985) we also focus on these unique effects.

Time-based WHC considers the conflict of employee’s time within different roles. This conflict results because the time pressure within the work role makes it impossible to perform some duties from the private role such that employees are exhausted and drained. This dimension of WHC is based on working hours, the frequency of overtime, and the presence and irregularity of shiftwork (Greenhaus and Beutell 1985; Netemeyer et al. 1996). Employees, who spend more time in the work role have less time to fulfill their duties in the private role and have less time to recover from work which results in work exhaustion (Ferguson et al. 2016). The competition between the work and private role for the employee’s time costs mental resources and reduces recovery time which increases employees’ work exhaustion. Hence, we assume that:

H1a: The higher the time-based WHC, the higher the work exhaustion.

Strain-based WHC occurs when tension, anxiety, or fatigue in the work role influences the performance of an employee in the private role (Greenhaus and Beutell 1985; Netemeyer et al. 1996). Negative events (e.g., conflict between work and private) are attributed to external sources (e.g., work) instead of internal (e.g., private) to maintain positive self-view (Greenwald 1980). Regarding WHC, employees blame more frequently the work role rather than the private role (Poposki 2011). Hence, the work is blamed for the conflicts which occur when employees bring work-based tensions into the private role and are therefore not able to fulfill their responsibilities in this role. As strain perceived in the work role is responsible for this conflict, employees condemn their work for this situation. This increases work exhaustion because they struggle with the work-based tensions as well as the strain-based conflict between the work and their families. Therefore, we presume that:

H1b: The higher the strain-based WHC, the higher the work exhaustion.

Behavior-based WHC occurs when the behavior in the work role affects the behavior in the private role (Carlson et al. 2000). Specific behavior within the work role might be inconsistent with expectations regarding behavior in the private role (Greenhaus and Beutell 1985). As mentioned above, the conflict between work and private life is mostly attributed to the work role in order to maintain a positive self-image (Greenwald 1980; Poposki 2011), which in turn increases the overall work exhaustion. The conflict may occur when employees behave in the private role as if they were in the work role. It increases the overall work exhaustion because the culprit is seen within in the work role. Returning to the example above, employees blame the work role for the struggle which occurs when a manager behaves independently, emotionally stable, aggressively, and objectively in the private role instead of behaving with warmth, emotions, and vulnerability. Hence, when an employee is unable to adjust his behavior to meet the duties in the private role, overall work exhaustion increases because work is blamed for this incompatibility between work and private life. Therefore, we assume that:

H1c: The higher the behavior-based WHC, the higher the work exhaustion.

The Techno Level: The Effect of IT-based WHC on IT-based Exhaustion

On a techno level, previous research identifies IT-based WHC as an antecedent of IT-based exhaustion, which is understood as the depletion of mental resources due to IT usage (Ayyagari et al. 2011). As the usage of mobile devices and broadband connections make employees potentially reachable twenty-four seven, the
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boundaries between work and private are blurred (Ayyagari et al. 2011; Sarker et al. 2012). In addition, employees use an increasing number of privately-owned IT rather than enterprise IT at and for work, which blurs the boundary between work and private life (Köffer et al. 2014; 2015) and increases IT-based exhaustion (Ortbach et al. 2013). As employees perceive a conflict between work and private due to IT usage, the metal resources decrease. Hence, we assume that:

**H2: The higher the IT-based WHC, the higher the IT-based exhaustion.**

**The Impact of the Techno Level on the Work Level**

**The Effect of IT-based on Time-, Strain- and Behavior-based Work-home Conflict**

Prior literature implies a relationship between the techno level and the work level (Maier et al. 2015a). Regarding WHC, research indicates that IT-based WHC has an effect on work-based WHC (Maier et al. 2015a; Turel et al. 2011a). Past literature indicates that IT usage for work purposes in the household increases time-based WHC (Ferguson et al. 2016). Employee roles are no longer restricted by spatial or temporal conditions. Their technical ability to connect to work-related resources at nearly any time and any place using mobile devices blurs the boundaries between work and private (Sarker et al. 2012). As employees can work from almost everywhere using IT, they are able to spend time in the work role even they are at home or on vacation, which decreases the time they can spend on their private life. Furthermore, since employees spend more time in the role in which they are potentially more satisfied (Edwards and Rothbard 2000), they may choose to or feel pressure to work at home, at the expense of spending time fulfilling their duties in the private role (Ferguson et al. 2016). Consequently, we assume that IT-based WHC influences time-based WHC if employees spend even more time in the work role and neglect their private life when boundaries between work and private are blurred due to IT usage. Therefore, we assume that:

**H3a: The higher the IT-based WHC, the higher the time-based WHC.**

Because the boundaries between work and private are blurred due to IT-based WHC (Ayyagari et al. 2011), the strain symptoms of the work role might have stronger effects on the performance of an employee in the private role. For example, the anxiety or fatigue of employees perceived at work influence the private role stronger because it is not clear when work is over and when private time begins. For example, employees sometimes use their private cell phone for work purposes, which makes it almost impossible to compartmentalize between work and private because the phone might also ring in the private role (Köffer et al. 2015). Research shows that the usage of IT at home or on vacation for work purposes costs emotional resources and brings work-related depletion back into the private role (Ferguson et al. 2016). For example, when employees are at home, and their mobile phone rings or they are alerted that a work e-mail has arrived, work issues can come up, which can result in work anxiety or fatigue into the private role, and in turn, increase strain-based WHC. Hence, we believe that:

**H3b: The higher the IT-based WHC, the higher the strain-based WHC.**

Behavior-based WHC results when behavior within the work role is inconsistent with expectations regarding behavior in the private role (Carlson et al. 2000). Inappropriate behavior within the household role might occur because the boundaries between work and private are blurred because of IT usage. Because work and private role are blended, there is no longer a clear physical separation between these roles, which shortens or eliminates the phase in which employees switch their behavior. Thus, role- and location-specific behavior is no longer clearly differentiated due to the blending of work and private boundaries (Duxbury et al. 1992). Employees might not be aware whether they are in the job role or the private role and hence behave inappropriately. Prior findings show that work-based IT usage in the household or on vacation creates behavior-based WHC because work behavior is needed during the use of IT which is not helpful in the private role (Ferguson et al. 2016). For example, if employees are at home and handling critical issues with their colleagues and directly afterward have to put their children to bed, they might treat their children as colleagues or subordinates and without warmth and emotions. Therefore, we assume that IT-based WHC influences behavior-based WHC.

**H3c: The higher the IT-based WHC, the higher the behavior-based WHC.**
The Effect of IT-based WHC on Work Exhaustion

Past literature provides evidence that the conflict between roles significantly influences work factors such as job satisfaction or performance (Tarafdar et al. 2007). Many employees depend heavily on IT during their work and it is very common to use computers and cell phones for work purposes. As IT is so intricately tied to work processes (Laumer et al. 2016), some employees are not able to accomplish their work goals without using IT. As IT and work are so tightly related, the blurred boundaries between work and private not only lead to IT-based exhaustion but may also directly influence work exhaustion, because the IT usage is such an integral part of their daily work, and they might not be able to differentiate between work and IT, such that we assume:

\[ H_4: \text{The higher the IT-based WHC, the higher the work exhaustion.} \]

The Effect of IT-based Exhaustion on Work Exhaustion

Previous literature provides evidence that IT-based exhaustion increases work exhaustion (Maier et al. 2015a) and since IT usage is an important part of many modern jobs, employees who are exhausted due to IT usage (Ayyagari et al. 2011) may also be exhausted within the job. When employees are drained or exhausted because of IT usage, they are less energetic and are frustrated at work such that their work exhaustion increases. Hence, we assume that:

\[ H_5: \text{The higher the IT-based exhaustion, the higher the work exhaustion.} \]

Research Methodology: Design and Measurement

In this section, we describe our research design and data collection process to validate our research model. To validate the research model, we collected data using an online survey. Our institute cooperates with an HR organization that provides HR services to both organizations and employees. We randomly selected one thousand employees from the customer database of the project partner and sent them the hyperlink to our questionnaire. We received 834 responses, which reflects a response rate of 83.4 percent. We based our research on the responses from 542 employees who submitted complete surveys and who had the requisite level of work experience. The sample reflects a suitable data sample for our research as the majority currently have a job and are between 35 and 54 years old. The demographics of the participants are listed in Table 1.

On the IT level, we measured IT-based WHC and IT-based exhaustion by adopting the scales by Ayyagari et al. (2011). On the work level, we measured the three work-dimensions of WHC using the scale proposed by Carson et al. (2000) and drawing on the work exhaustion scale proposed by Ahuja et al. (2007). All items were measured on a 7-point Likert scale ranging from 1 (strongly agree) to 7 (strongly disagree). Because negative perceptions such as work exhaustion might skew distributions (Turel et al. 2011b), and since partial least square (PLS) does not require normally distributed data (compared to covariance-based structural equation modeling), we use SmartPLS 3.2.2 (Ringle et al. 2015). In addition, we used SPSS 23.0 to calculate the demographics and test for mediation effects.

### Table 1. Study participants

<table>
<thead>
<tr>
<th>Demographics (N=542)</th>
<th>Work situation (%)</th>
<th>Educational status (%)</th>
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</thead>
<tbody>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>60.1</td>
<td>Full-time contract</td>
</tr>
<tr>
<td>Women</td>
<td>39.9</td>
<td>Part-time contract</td>
</tr>
<tr>
<td>Age (%)</td>
<td></td>
<td>Currently no contract</td>
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<tr>
<td>15-24</td>
<td>0.2</td>
<td></td>
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<tr>
<td>25-34</td>
<td>19.7</td>
<td></td>
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<tr>
<td>35-44</td>
<td>25.8</td>
<td></td>
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<tr>
<td>45-54</td>
<td>37.1</td>
<td></td>
</tr>
<tr>
<td>55-65</td>
<td>16.1</td>
<td></td>
</tr>
<tr>
<td>Over 65</td>
<td>1.1</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Vocational training</td>
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<td></td>
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<td></td>
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<td>PhD</td>
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<tr>
<td></td>
<td></td>
<td>Others</td>
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<tr>
<td></td>
<td></td>
<td>31.5</td>
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<tr>
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<td></td>
<td>51.7</td>
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<td>11.4</td>
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Research Results

Before presenting our results, we will demonstrate that our data are not subjected to common method bias (CMB) and that the research model is valid and reliable following generally accepted thresholds of validity and reliability.
Common Method Bias

Perceived and subjective measures are used to capture employees’ responses to a given situation. A potential issue with subjective measures is common method bias (Podsakoff et al. 2003). To evaluate the extent of CMB, we utilize Harman’s single factor test (Harman 1976) and the procedure suggested by Williams et al. (2003). The results of the Harman’s single factor test show that one factor explains 32.7% of the variance, which is not the majority, such that we conclude that CMB is of no great concern. Furthermore, we follow the procedure suggested by Williams et al. (2003), during which an additional factor is entered into the PLS model, which contains each indicator of the origin model. The remaining factors are transformed into single-item constructs, and the ratio of R² with the CMB factor is compared with the R² without the CMB factor. The CMB factor explains an average R² of 0.003 so that a ratio of 1:217 is received. By comparing this ratio with the ratio of prior research using this approach (Liang et al. 2007), we can state that no signs of CMB influence are observed despite several flaws in this method (Chin et al. 2012).

Measurement Model

To ensure that the measurement model we chose to test our hypotheses is valid and reliable and as we measured all constructs with reflective indicators, we validated the measurement model in terms of content validity, indicator reliability, construct reliability, and discriminant validity (Bagozzi 1979).

Table 2: Measurement model of overall sample

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>AVE</th>
<th>CR</th>
<th>Loadings</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TT-based WHC</td>
<td>4.43</td>
<td>1.47</td>
<td>7.63</td>
<td>.706</td>
<td>.733-852</td>
<td>873</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Strain-based WHC</td>
<td>3.47</td>
<td>1.54</td>
<td>8.02</td>
<td>.791</td>
<td>.828-924</td>
<td>404</td>
<td>.895</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Time-based WHC</td>
<td>3.36</td>
<td>1.35</td>
<td>7.19</td>
<td>.727</td>
<td>.754-894</td>
<td>370</td>
<td>621</td>
<td>.848</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Behavior-based WHC</td>
<td>4.14</td>
<td>1.33</td>
<td>5.90</td>
<td>.881</td>
<td>.736-816</td>
<td>323</td>
<td>466</td>
<td>.768</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 IT-based exhaustion</td>
<td>5.29</td>
<td>1.54</td>
<td>8.69</td>
<td>.964</td>
<td>.800-950</td>
<td>481</td>
<td>418</td>
<td>.344</td>
<td>.349</td>
<td>.932</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Work exhaustion</td>
<td>4.31</td>
<td>1.67</td>
<td>8.17</td>
<td>.922</td>
<td>.879-930</td>
<td>370</td>
<td>655</td>
<td>.359</td>
<td>.533</td>
<td>.904</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Age</td>
<td>44.6</td>
<td>10.07</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0.019</td>
<td>0.080</td>
<td>0.095</td>
<td>0.050</td>
<td>0.035</td>
<td>0.178</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>8 Gender</td>
<td>1.40</td>
<td>0.49</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0.061</td>
<td>0.146</td>
<td>0.002</td>
<td>0.045</td>
<td>0.112</td>
<td>0.091</td>
<td>0.079</td>
<td>NA</td>
</tr>
</tbody>
</table>

Note: Square root of AVE is listed on the diagonal of bivariate correlations; NA = not applicable because of single item construct

Content validity: To ensure content validity, we used items that have been used in prior research articles (see Appendix Table 5) and discussed each item within our project team and with the managers of our cooperation partner.

Indicator reliability: This reflects the rate of the variance of an indicator that comes from the latent variables. To ensure that 50 percent or more of the variance is explained by the indicators, each value should be at least 0.707 (Carmines and Zeller 2008). All other items which have not been fulfilled this threshold were removed from the model. Table 2 shows that this condition is fulfilled, and moreover, each loading has a significance level of at least 0.001.

Construct reliability: To determine construct quality, we use composite reliability, which should be at least 0.7, and average variance extracted (AVE), which has to be at least 0.5 (Fornell and Larcker 1981). Both criteria are fulfilled (see Table 2). Also, the Cronbach’s Alpha values of all constructs in the model are higher than 0.7 (see Appendix Table 5).

Discriminant validity: This reflects the extent to which items differ from other items (Campell and Fiske 1959). The square root of AVE should be greater than the corresponding construct correlations (Fornell and Larcker 1981; Hulland 1999). Table 2 shows that the square roots of the values are greater than the corresponding correlations between the constructs. As Henseler et al. (2015) state, the Fornell-Larcker criterion does not detect a lack of discriminant validity in each case. Hence, we also ensured that the most conservative 0.85 heterotrait-monotrait (HTMT) criterion is fulfilled. As the highest correlation between strain-based WHC and work exhaustion is 0.77 – and hence lower than 0.85 – and the bootstrapping approach shows that HTMT is in each sample significantly different from 1, we can state that discriminant validity using HTMT0.85 is not an issue in the present research. We thus conclude that our measurement model is valid.
Structural Model

To validate the structural model displayed in Figure 2 we use the coefficient of determination (R²) and the significance levels of the path coefficients (Chin 1998). On the work-level, work exhaustion is positively influenced by time-based WHC and strain-based WHC, whereas the behavior-based WHC has an insignificant effect on work exhaustion. These results support H1a, H1b and do not support H1c. On the techno level, our results show that IT-based WHC significantly influences IT-based exhaustion, which supports H2. By focusing on the effect of the techno level on the work-level, results show that IT-based WHC positively influences time-based WHC, strain-based WHC, behavior-based WHC, which support H3a, H3b, and H3c. Also, the influence of IT-based WHC on work exhaustion is insignificant, which does not support H4. Furthermore, the results show that IT-based exhaustion significantly increases work exhaustion, which supports H5.

Also, we controlled whether age and gender have an effect on work exhaustion. Findings show that age has a significant effect on work exhaustion, whereas no significant effect for gender was found.

Turning to the coefficient of determination (R²), we can demonstrate that on a work-level, 53.6 percent of the variance of work exhaustion is explained. On a techno level, IT-based exhaustion is explained to 23.1 percent. Also, results show that IT-based WHC explains time-based WHC to 13.7 percent, strain-based WHC to 16.3 percent, and behavior-based WHC to 10.4 percent.

![Figure 2: Structural model and coefficients of determination](image)

Post-hoc Analysis: Mediation, Total Effects, and Confirmatory Factor Analysis

Our findings demonstrate that IT-based WHC has no direct effect on the work exhaustion. As past literature shows an effect between the techno level and the work level (Maier et al. 2015a; Turel et al. 2011a), IT-based WHC might have an indirect effect on work exhaustion. To validate whether the influences of IT-based WHC on work exhaustion is mediated by time-based WHC, strain-based WHC, behavior-based WHC, or IT-based exhaustion, we use a bootstrapping method as suggested by Preacher and Hayes (Preacher and Hayes 2004). The method suggests calculating the 95 percent-bias-corrected confidence intervals (1,000 bootstrap resamples) of each independent variable. If zero does not lie within the bias-corrected interval,
the independent variable has an indirect effect through the mediator on the depended variable. The results show that IT-based WHC indirectly affects work exhaustion through IT-based exhaustion, time-based WHC, strain-based WHC, and behavior-based WHC.

In addition, we provide the total effects of the four WHC dimensions on work exhaustion. Our findings indicate that strain-based WHC has the highest total effect on work exhaustion, whereas IT-based WHC shows the second highest effect followed by time-based WHC. These results are presented in Table 3.

Besides the test of discriminant validity, we also conducted a confirmatory factor analysis with a Varimax (orthogonal) rotation of 17 items of the four dimensions of WHC. The analysis yielded a four-factor solution with a simple structure. The results indicate that all four dimensions of WHC are independent.

**Table 3: Indirect and total effects of IT-based WHC on work exhaustion**

<table>
<thead>
<tr>
<th>Independent variable (IV)</th>
<th>Mediator (M)</th>
<th>Dependent variable (DV)</th>
<th>Bootstrapping results overall sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT-based WHC</td>
<td>IT-based exhaustion</td>
<td>Work exhaustion</td>
<td>R² full time worker (N=327)</td>
</tr>
<tr>
<td>IT-based WHC</td>
<td>Time-based WHC</td>
<td>Work exhaustion</td>
<td>.170**</td>
</tr>
<tr>
<td>IT-based WHC</td>
<td>Strain-based WHC</td>
<td>Work exhaustion</td>
<td>.400***</td>
</tr>
<tr>
<td>IT-based WHC</td>
<td>Behavior-based WHC</td>
<td>Work exhaustion</td>
<td>.002NS</td>
</tr>
<tr>
<td>Time-based WHC</td>
<td>- &gt;</td>
<td>Work exhaustion</td>
<td>.464***</td>
</tr>
<tr>
<td>Strain-based WHC</td>
<td>- &gt;</td>
<td>Work exhaustion</td>
<td>.378***</td>
</tr>
<tr>
<td>Behavior-based WHC</td>
<td>- &gt;</td>
<td>Work exhaustion</td>
<td>.343***</td>
</tr>
<tr>
<td>Work exhaustion</td>
<td>- &gt;</td>
<td>Work exhaustion</td>
<td>.036NS</td>
</tr>
</tbody>
</table>

**Post-hoc Analysis: Full Time vs. Part Time Working Participants**

WHC might be affected by job characterizes such as working hours and working arrangements. Hence, we differentiate between full time and part time working participants and controlled whether different work arrangements effect the WHC dimensions. By splitting the sample into full time and part time working participants, the results show that the effects at the techno level are the same for both groups. Regarding the work-level, we reveal some differences between the two groups. For participants who work full time the influences of time-based and strain-based WHC on work exhaustion is significant, whereas for part time workers only a significant effect between strain-based WHC and work exhaustion has been found. Detailed results are shown in Table 4.

**Table 4: Structural model for full time and part time working participants**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Independent variable (IV)</th>
<th>Dependent variable (DV)</th>
<th>Full time worker (N=327)</th>
<th>Part time worker (N=196)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work level</td>
<td>H1a</td>
<td>Time-based WHC</td>
<td>.123**</td>
<td>.140*</td>
</tr>
<tr>
<td></td>
<td>H2b</td>
<td>Strain-based WHC</td>
<td>.000NS</td>
<td>.025NS</td>
</tr>
<tr>
<td></td>
<td>H3c</td>
<td>Behavior-based WHC</td>
<td>.329***</td>
<td>.256**</td>
</tr>
<tr>
<td></td>
<td>H4</td>
<td>IT-based WHC</td>
<td>.464***</td>
<td>.236***</td>
</tr>
<tr>
<td></td>
<td>H5</td>
<td>IT-based exhaustion</td>
<td>.378***</td>
<td>.343***</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>Age</td>
<td>.123**</td>
<td>.140*</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>Work exhaustion</td>
<td>.000NS</td>
<td>.025NS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable (DV)</th>
<th>R² full time worker</th>
<th>R² part time worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work-based WHC</td>
<td>14.3%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Strain-based WHC</td>
<td>11.8%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Behavior-based WHC</td>
<td>7.6%</td>
<td>12.7%</td>
</tr>
<tr>
<td>IT-based exhaustion</td>
<td>21.6%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Work exhaustion</td>
<td>53.5%</td>
<td>53.3%</td>
</tr>
</tbody>
</table>
Discussion and Implications

In general, the finding of the present study align well with previous research results (Ahuja et al. 2007; Ayyagari et al. 2011; Maier et al. 2015a). As in previous studies, we reveal that employees are exhausted due to IT usage and due to their work (Ahuja et al. 2007; Ayyagari et al. 2011). We provide further evidence for the previous conclusion that employees who are exhausted by the usage of IT also perceive a higher work exhaustion (Maier et al. 2015a). Moreover, our results align with Ayyagari et al. (2011) who identified a significant relationship between IT-based WHC and IT-based exhaustion.

However, we also provide additional insights which go beyond the results of previous research. As discussed above, when focusing on WHC, prior IS research consider it only at a techno level, indicating that the WHC is based on IT usage (Köffer et al. 2015; Turel et al. 2011a) or at the work level indicating IT personnel perceives a work-based WHC (Ahuja et al. 2007; Sarker et al. 2010). Furthermore, most of previous IS research only adopts a one-dimensional focus on WHC and neglects its multidimensionality, as demonstrated above. The present study theorized and empirically validated the influence of the multiple dimensions of WHC on work exhaustion. The results also show that IT-based WHC has no direct effect on the work exhaustion, but it is shown that time-based WHC and strain-based WHC are the major dimensions of WHC, which influences work exhaustion, whereas IT-based WHC has an only indirect effect on work exhaustion. These additional findings contain several theoretical and practical contributions, which are discussed subsequently.

Theoretical Implications

The current research focuses on the WHC construct by considering the different dimensions of WHC (Greenhaus and Beutell 1985), which are either based on IT usage or work in general. The theoretically developed and empirically evaluated research model is the first approach in WHC research to consider four dimensions of WHC, differentiate between a techno level and a work level, and consider the influence of the techno level on the work level. Therefore, the paper contributes to the literature in three different ways which are illustrated in Figure 3 and explained in the following.

![Figure 3: Theoretical implications of the present examination](image)

**Four Dimensions of Work-home Conflict**

Our study contributes by theorizing and empirical validating that WHC has four distinct dimensions (see Figure 3 implication I): strain-based, time-based, behavior-based, and IT-based WHC. We demonstrate that WHC has besides the three work-based dimensions also an IT-based dimension. By conducting a confirmatory factor analysis, we validate that these four dimensions are independent.

Therefore, the present paper extends prior general WHC work, such as Greenhaus et al. (1985) and Carlson et al. (2000), who establish that WHC encompasses three work-based dimensions, by demonstrating that in addition to these work dimensions, WHC also has an IT-based dimension. IT devices such as laptops and cell phones in combination with broadband connections are blurring the boundaries between work and private by providing increased access to IT (Köffer et al. 2015; Turel et al. 2011a). Therefore, we contribute...
to the general psychological literature by indicating that in addition to resulting from time, strain, and behavior incompatibility, WHC also results from IT usage.

By using this extended conceptualization of WHC, we also contribute to research, which investigated WHC in a general work context. In this context, our focus on the WHC constructs provides results which go beyond the one-dimensional results of prior literature. In particular, the results enhance prior work by Ahuja et al. (2007) who investigate WHC as antecedents of work exhaustion among IT road warriors, who are IT professionals who spend most of their workweek away from home at a client site. By narrowing our focus on WHC and investigating the effect of four dimensions of WHC on work exhaustion, our results show that WHC is multidimensional and only two of the four dimensions, namely time-based WHC and strain-based WHC, significantly influence work exhaustion. In other words, the time incompatibilities between work and private and the strain transferred from the work role to the private role are the major reason why WHC increases work exhaustion. IT-based and behavior-based incompatibilities between work and private have no direct effect on work exhaustion. Furthermore, our results show that the effect of time-based WHC is also moderated by work arrangements such as full-time work or part-time work and that time-based WHC is only an issue among full-time workers. Also, we extend prior WHC work, such as Sarker et al.’s (2010), who investigated antecedents of a general work-based WHC, or Turel et al.’s (2011a) and Köffer et al.’s (2014), who investigated only an IT-based WHC, by revealing that WHC is multidimensional and contains an IT-based dimension and three work dimensions.

In summary, we contribute to WHC literature by indicating that WHC is multidimensional and contains work and IT dimensions. Future studies focusing on WHC should use this extended WHC conceptualizing to reveal the effect of the four dimensions in different contexts and more precisely identify the sources of WHC. In our study we revealed only significant influences of time- and strain-based WHC on work exhaustion, whereas in another context these influences might differ. While our findings imply that WHC has four dimensions, it these dimensions may exert different influences depending on the context. Future research is required to further investigate this contextual nature of WHC.

**IT-based WHC as an Antecedent of Work-based Dimensions of WHC**

Prior literature shows that WHC has been investigated either on a techno level or a work level (Ahuja et al. 2007; Ayyagari et al. 2011). Our in-depth study of the WHC construct reveals four WHC dimensions as well as a significant relation between the IT-based and the work-based WHC dimension. We theorized based on previous literature indicating that IT factors influence work factors (Maier et al. 2015a) that general time-, strain-, and behavior-based WHC are influenced by an IT-based WHC (see Figure 3 implication II). We argue that the usage of IT enables employees to spend time in the private role on work duties and facilitates pressure on employees to access work-related content at all times. This theoretically derived influence is validated by our study.

Hence, our study contributes to research as we extend the results of Ayyagari et al. (2011) by indicating that IT-based WHC influences not only IT-based exhaustion, but also directly influences work-based dimensions of WHC. In addition, our results extends research focused on the work dimensions of WHC (Ahuja et al. 2007; Sarker et al. 2010) by revealing IT-based WHC as a direct antecedent of WHC on the work level. Moreover, our findings extend prior literature such as Turel at al. (2011a), who demonstrate that IT-based WHC has an effect on work-based WHC, by providing evidence that IT-based WHC significantly affects time-based, strain-based, and behavior-based WHC. Furthermore, this result also extends general WHC literature such as Greenhaus et al. (1985) and Carlson et al. (2000) by revealing that IT-based WHC is not only an additional dimension of WHC, but also a direct antecedent of time-based WHC, strain-based WHC, and behavior-based WHC.

In summary, we contribute to WHC literature and psychological WHC literature by theorizing and providing empirical evidence for IT-based WHC as a direct antecedent of time-based WHC, strain-based WHC, and behavior-based WHC. For future studies on WHC, this result implies not only that the four WHC dimensions need to be considered, but also the influence of one dimension on another. In our study, we focused on the influence of IT-based WHC on the work-based dimensions, and future research can extend this result by measuring the interplay among the three work-based WHC dimensions.
Indirect Effect of IT-based WHC on Work Exhaustion

This study’s close focus on the WHC construct also facilitates the analysis of the different effects of IT-based and general work-based WHC on employees’ work exhaustion. Our study reveals that IT-based WHC has no direct influence on work exhaustion, whereas strain-based and time-based WHC has a direct influence. Hence, employees are in general more exhausted by time-based and strain-based WHC than by IT-based WHC. However, our study also reveals an indirect influence of IT-based WHC on work exhaustion. Time-, strain-, and behavior-based WHC mediate the effect of IT-based WHC on work exhaustion and IT-based exhaustion mediates the effect of IT-based WHC on work exhaustion. As IT-based WHC has no direct effect on work exhaustion but indicates the second highest total effect, we assume that IT-based WHC is one major reason why employees perceive time-, strain-, and behavior-based WHC.

The present paper contributes to literature such as Ahuja et al. (Ahuja et al. 2007), who find that work-based WHC leads to work exhaustion, by showing that work-based WHC acts as a mediator between IT-based WHC and the work exhaustion. The blurring of boundaries between work and private life due to IT usage increases time-, strain-, and behavior-based WHC, which in turn result in work exhaustion. We also extend prior research examining the influence of IT-based WHC on IT-exhaustion (Ayuyagari et al. 2011) by revealing new insights into the effect of the technos level on the work level by showing that IT-based WHC has no direct effect on work exhaustion. Instead, it leads to the time-, strain-, and behavioral-incompatibilities between the work role and the private role and indirectly influences work exhaustion. Moreover, we reveal IT-based exhaustion as a mediator for the influence of IT-based WHC on work exhaustion, such that we can conclude that IT-based exhaustion mediates the effect of IT-based WHC on work exhaustion. Furthermore, we extend WHC literature such as Ferguson et al. (2016), who investigate the effect of work-based IT usage in the private role on work dimensions of WHC and in turn on burnout, by demonstrating that the work dimensions of WHC mediate the effect of IT-based WHC on work exhaustion as a specific characteristic of burnout.

In summary, the present paper contributes to WHC literature and psychological WHC literature by revealing that IT-based WHC has no direct but rather an indirect effect on work exhaustion, whereby the three work-based WHC dimensions – time-based, strain-based, and behavior-based WHC – as well as IT-based exhaustion – act as mediators (see Figure 3 right). Therefore, IT-based WHC is not the only source and symbol of work exhaustion, but rather reinforces the effect of other WHC dimensions and IT-based exhaustion. Scholars investigating WHC and work exhaustion should, therefore, consider all dimensions of WHC and also IT-based exhaustion.

Practical Implications

The actions taken, the policies implemented, and the laws passed to reduce employees’ WHC by organizations and nations, focus primarily on IT usage, for example, not delivering e-mails after working hours (de Castella 2014; The Economist 2014). However, our studies show that IT-based WHC has no direct effect on the work exhaustion of employees, but rather only indirectly affects work exhaustion. The major contributing factors contributing to work exhaustion are time-based WHC and strain-based WHC. Hence, although IT-based WHC is not the sole source of work exhaustion, it amplifies the work dimensions of WHC – time-based, strain-based, and behavior-based WHC – which in turn increase work exhaustion.

Consequently, the study suggests that policies limited to regulating IT usage such as e-mail delivery should be accompanied by additional measures to counteract WHC with regard to its time-, strain-, and behavior-based components. Hence, to reduce WHC, policies should address not only IT usage, but also the general organization of working time, the general demands required by a job, and the general behaviors required by employees. Focusing solely on IT usage may indirectly effect employee’s work exhaustion, whereas policies considering time-, strain-, and behavior-based dimensions will have a greater and more direct effect. Hence, based on the results of this study, organizations should treat IT-based WHC as only one factor that indirectly affects work exhaustion and adopt a holistic approach to reducing employee exhaustion at work including the other three work-based dimensions of WHC.

Limitations and Future Research

As with all empirical research, the present examination is limited in several ways. For example, the present study does not differentiate between various job types. The work environment of job types (Eckhardt et al.
2014) differ as some employees have the opportunity to work from home and some do not because they need specific resources which are only available at the office. Also, in some jobs employees receive a cell phone or use their private devices for work purposes. These various job types and restrictions might affect the perception of WHC and should be considered by future research. By differentiating between the techno and work level, we follow prior literature (Maier et al. 2015a) but neglect that these levels might also overlap because IT is so intricately related to work processes. Future research might also concentrate on coping strategies which can reduce the perception of WHC and its consequences. In line with Sarker et al. (2012), future literature should focus on management strategies which reduce all dimensions of WHC and not only IT-based WHC. In addition, the present paper only concentrates on the conflict between work and private life, whereas conflict in private life may also affect work performance (Carlson et al. 2000; Koch et al. 2012), which should be taken into consideration in future research. We identify IT-based WHC as contributing factor of the work-based dimensions of WHC and neglect further antecedents, so future literature should focus on antecedents of all four WHC dimensions. Furthermore, several examinations on the work-level concentrate on a unique group of employees, IT professionals (Ahuja et al. 2007; Armstrong et al. 2015; Maier et al. 2015b; Sarker et al. 2010). Further research should focus on that unique group and investigate the effect of WHC and differentiate between IT professionals and other employees.

Conclusion

In this paper, we propose and test a model to illustrate that IT-based WHC is not the sole factor leading to work exhaustion. By focusing on the WHC construct, the empirical analysis of our model reveals that IT-based WHC does not directly influence work exhaustion, but rather only indirectly via the general time-, strain-, and behavior-based dimensions of WHC and IT-based exhaustion. Among the WHC dimensions, strain-based WHC and time-based WHC are the main factors contributing to work exhaustion.

References


Is Information Technology Solely to Blame?


The Economist 2014. France’s 6pm e-mail ban - Not what it seemed.


### Appendix

#### Table 5: Research items

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
</tr>
</thead>
</table>
| **Time-based WHC** (Carlson et al. 2000) | Cronbach's α = .901  
On the job I have so much work to do that it takes away from my personal interests.  
I would like to spend the time I currently need to spend on my work on my family or my friends instead.  
The time I must devote to my job keeps me from participating equally in household responsibilities and activities.  
I feel guilty about spending too much time at work and not enough time with my family.  
I miss private activities because I spend too much time working.  |
| **Strain-based WHC** (Carlson et al. 2000) | Cronbach's α = .917  
The stress from my job often makes me irritable when I get home.  
When I get home from work I am often too physically tired to participate in family activities/responsibilities.  
Tension and anxiety from work often creep into my family life.  
Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.  |
| **Behavior-based WHC** (Carlson et al. 2000) | Cronbach's α = .826  
I am not able to act the same way at home as I do at work.  
The problem-solving behaviors I use in my job are not effective in resolving problems at home.  
I act differently in responding to interpersonal problems at work than I do at home.  
Behavior that is effective and necessary for me at work would be counterproductive at home.  
The behaviors I perform that make me effective at work do not help me to be a better parent and spouse.  |
| **IT-based WHC** (Ayyagari et al. 2011) | Cronbach's α = .845  
Using ICTs blurs the boundaries between my job and my home life.  
Using ICTs for work-based responsibilities creates conflicts with my home responsibilities.  
I do not get everything done at home because I find myself completing job-based work using ICTs.  |
| **IT-based exhaustion** (Ayyagari et al. 2011) | Cronbach's α = .950  
I feel drained from activities that require me to use ICTs.  
I feel tired from my ICT activities.  
Working all day with ICTs is a strain for me.  
I feel burned out from my ICT activities.  |
| **Work exhaustion** (Ahuja et al. 2007) | Cronbach's α = .926  
I feel emotionally drained from my work.  
I feel used up at the end of the work day.  
I feel fatigued when I get up in the morning and have to face another day on the job.  
I feel burned out from my work.  |

Note: All items are assessed on a 7-point Likert scale (1 = strongly agree to 7 = strongly disagree)