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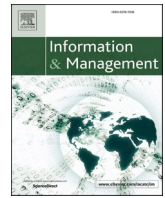
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# How Embeddedness Influences IT-Induced Work–Home Boundary Reduction, Work–Home Conflict, and Job Outcomes

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## ABSTRACT

Work–home conflict (WHC) explains how IT use blurs the boundaries between work and private roles. We extend that knowledge by highlighting the importance of work–home embeddedness (WHE) and its impact on WHC. Drawing on boundary theory, we hypothesize that IT-induced work–home boundary reduction (IT-WHBR) exacerbates WHC, influencing job outcomes. Utilizing embeddedness theory and data from 862 individuals, we categorize three distinct WHE groups. Our findings clarify how IT-WHBR shapes WHC and how diverse WHE groups moderate the relationship between IT-WHBR, WHC, and job outcomes. This paper significantly contributes to existing literature by revealing dynamics within work–home interactions.

## 1. Introduction

Imagine Bob—a married employee with two children—who must work overtime using his work laptop at home, preventing him from spending time with his friends and family. The interference of the work role with the private home role leads to work–home conflict (WHC). In such a conflict, allocating resources to the work and private home roles is somehow incompatible [1]. WHC is multifaceted, with roles competing for different resources of time, strain, and behavior, known as time-, strain-, and behavior-based WHC [1–3]. We also know that IT use has a great influence on WHC. For example, the literature discusses WHC in the context of IT use [4–6] and IT professionals [7,8]. The results show that IT use directly increases WHC, which then manifests in negative consequences. These consequences range from work exhaustion [7] over decreased organizational commitment to increased intentions to quit a job [7,9]. High turnover rates resulting from WHC predict a major challenge for organizations because firms face a shortage of personnel [10] and a loss of employee knowledge [11].

The impact of IT use on WHC and its adverse job outcomes is well documented and has a long-standing history in the IS literature (see Table 2). We base this study on that research stream and will move it forward in two directions. First, IS research focuses on the direct effects

of IT use on WHC [4,6]. We want to provide additional insights into how IT use blurs the boundaries between the work and private home roles. Boundary theory [12] suggests that the work and private home roles are separated by lines of demarcation [13]. The work–home boundary is influenced by different moderators [14]. We explain that IT use increases work–home boundary permeability, resulting in “IT-induced work–home boundary reduction.” We assume that IS use reduces the work–home boundary, increasing the misallocation of resources between the work and private home roles. Second, because there are different types of embeddedness [15,16], we focus on embeddedness in the work and home roles and examine its impact on WHC. We assume that the relationship between IT-induced work–home boundary reduction, WHC, and adverse job outcomes depends on the embeddedness of each employee’s private home and work roles. For example, Alice—a young employee without children, not much involved in her job—is likely to have fewer conflicts between her work and private home role because her work and personal duties are less pressing. In contrast, Bob—an established employee, married, with two children, highly involved in his job—is likely to have more conflicts between his work and private home roles, which may cause greater work exhaustion and increase the intention to quit.

We aim to explain how IT-induced work–home boundary reduction

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influences the multifaceted conflict between work and the private home and adverse job outcomes and focus on work–home embeddedness. Therefore, our research question is:

*How does work–home embeddedness moderate the relationships between IT-induced work–home boundary reduction, work–home conflict, and job outcomes?*

We draw on role conflict theory [17] and conservation of resources (COR) theory [18,19] to explain the work and private home roles and the interference that can occur between them. Work–home conflict (WHC) occurs because the depletion of resources in one role makes it difficult to meet obligations in other roles [16,20]. Because WHC is multifaceted, we focus on time-, strain-, and behavior-based WHC [2]. Furthermore, we build on boundary theory [12] to argue that IT use also increases the permeability of the lines of delineation between the work and private home roles and develop a construct named “IT-induced work–home boundary reduction.” We hypothesize that IT-induced work–home boundary reduction increases WHC, leading to adverse job outcomes. Finally, we rely on embeddedness theory [21] and assume that employees’ embeddedness in each role moderates the relationship between IT-induced work–home boundary reduction, WHC, and job outcomes. For example, work–home embeddedness reflects whether the employees have children or live alone or with a partner. By identifying different work–home embeddedness groups, we aim to account for as many characteristics of employees’ work–home embeddedness as possible. Using the propensity score technique [22], we distinguish three groups that characterize specific work–home embeddedness situations and examine the influence of work–home boundary, WHC, and job outcomes.

The remainder of this article is organized as follows. We provide the theoretical background of our study by explaining the work–home conflict, IT-induced work–home boundary reduction, and work–home embeddedness. To analyze work–home embeddedness, we divide the participants into three groups of employees with different work and life characteristics. Then we develop our research model, explain our methodology, and present the results. Finally, we discuss the findings and draw implications for theory and practice.

## 2. Theoretical Background

We explain WHC from the perspective of the role theory and the conservation of resources theory. We introduce the concepts of work–home boundary and work–home embeddedness and review the current state of the literature.

### 2.1. Work-Home Conflict

Work–home conflict<sup>1</sup> is often explained by referring to role theory [17]. A role is a unique set of behaviors, requirements, responsibilities, and identities [17,23]. Individuals take on many roles in their work and private lives throughout their lives (see Fig. 1). For example, in the work role, individuals act as managers, line workers, experts, creative thinkers, or laborers. They are mothers, fathers, sons, daughters, sisters, or brothers in the private home role. Each role has its own objectives, values, norms, interactional styles, and time horizons [17,24]. Individuals prefer to take on an entire assortment of roles rather than just one role at a time [23].

Research has differentiated work from private home roles and assumed that role expectations in work and private life are rarely compatible (see Table 2). The conflict between work and home can be explained as a resource allocation issue [20]. Conservation of resources (COR) theory [18,19] assumes that individuals aim to maintain their status (e.g., remain employed or remain invested in home

responsibilities) in a given domain or role. Individuals accumulate and invest resources differently in each domain, so individuals are embedded to different degrees in different roles and are reluctant to give up resources [16,26]. Resources can be used to meet role demands, mitigate unwanted role experiences, and motivate people to stay in the role to avoid wasting resource losses [27]. Resources are finite, and using these resources in one role hinders the fulfillment of obligations in other roles [16,28]. Due to this resource allocation issue, interference occurs between the private home and work roles, leading to home-work conflict (HWC), or interference occurs between work and private home roles, leading to work–home conflict (WHC; see Fig. 1). The literature has emphasized the importance of WHC by pointing to its adverse effects on job outcomes, such as increased turnover intention [7,29,30].

The literature distinguishes between three resources over which the two roles compete. The allocation issues of time, strain, and behavior lead to time-, strain-, and behavior-based WHC [1,3,31], which are explained as follows:

*Time-based WHC* (T-WHC) occurs when the time spent in the work role makes it difficult to have enough time for the private home role [2]. For example, Bob’s work roles and private home roles interfere because he spends time at work that he cannot spend with his two children and wife. Research typically focuses on the number of working hours, the frequency of overtime, and the presence and irregularity of shift work to study this dimension [1,32].

*Strain-based WHC* (S-WHC) occurs when the burden of the work role influences activities in the private home role [2]. This conflict arises when symptoms such as tension, anxiety, or fatigue from the work role influence the private home role. For example, Alice’s work role and private home role interfere because she is stressed, and she carries these feelings home after the workday. The professional and private home roles are incompatible because the demands of the work role make it challenging to meet the duties of the private home role [1,32].

*Behavior-based WHC* (B-WHC) arises when behavior in the work role influences behavior in the private home role [2]. Specific behavior in the work role might be inconsistent with expectations regarding behavior in the private home role. Bob’s work and private home role interfere because he behaves at home as if he is still at work. He behaves more aggressively, for instance, when he sometimes yells at the children rather than showing understanding and hugging them. When an employee cannot adjust his or her actions to meet the behavioral expectations of the work role and private home role, B-WHC occurs [1].

### 2.2. Work-Home Boundary and IT Use

Boundary theory [12] suggests that boundaries are created and maintained to simplify and structure the environment. Roles, such as the work and private home roles, are structured by work–home boundaries, which include anything that delineates the scope and application of work and home life ([12]; see Fig. 1). Work–home boundaries are lines of demarcation that separate the work role from the private home role [13]. For example, space and time are boundaries for work–home roles. Most employees traditionally work nine to five or in a specific location, such as the company office. These boundaries vary in permeability, that is, the ease with which resources (e.g., time, effort, behavior) can cross these boundaries [12] by being assigned to another role. The higher the permeability of the work–home boundaries, the more likely is a role transition such that resources allocated to one role are more likely to be spent in the other role [12]. High-permeability work–home boundaries increase role transitions, which increase WHC [33]. The work–home boundary permeability is influenced by different factors, such as the ways we use IT for work and private purposes [34–36]. The use of IT shifts the lines of demarcation because employees can work and live in the same place, so space does not determine the work or private home role [37]. Constant connectivity to IT reduces the boundaries between work and home and increases crossing activities between the roles [36, 38,39]. Using IT for work purposes, such as reading work emails, blurs

<sup>1</sup> Also called work-life conflict, work-private conflict, work-family conflict, or work-nonwork conflict.

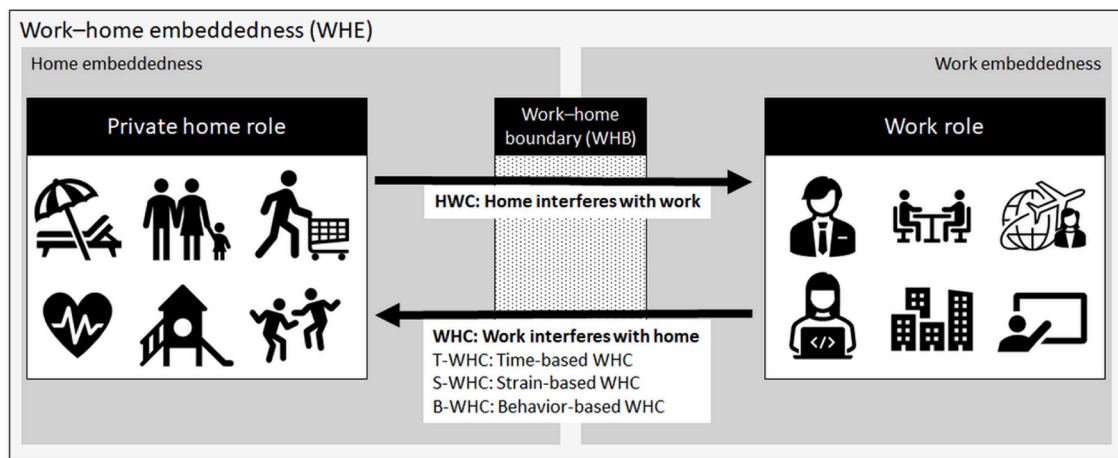


Fig. 1. Relation of work-home boundary, work-home conflict, and work-home embeddedness (based on [25])

the boundaries between work and private home roles by providing increased access to work from private spaces [40]. For example, Alice's work and private home roles interfere because the boundary between work and home is blurred when she works late at home using IT for work purposes. This lets us suggest that the ways we use IT for work and private purposes reduce the work-home boundary, resulting in a so-called "IT-induced work-home boundary reduction." Based on the above arguments, we define IT-induced work-home boundary reduction as an increase in the permeability of the lines of demarcation that separate the work role from the private home role due to IT use.

### 2.3. Work-Home Embeddedness: Determining Different Groups of Work-Home Embeddedness

Embeddedness theory [21] considers work-home embeddedness<sup>2</sup> (WHE; see Fig. 1), which encompasses the embeddedness of employees within the work and the private home role. Work embeddedness refers to the degree to which employees are entrenched in their jobs [16]. It can include forces such as hours worked, tenure, employment status, or position. Home embeddedness refers to the forces entailing employment in the private home role [16]. It can include family hours, number of children, or marital status. Embeddedness is an important factor in the relationship between WHC and turnover [16]. Embeddedness has positive effects, such as reduced impact of negative events on performance [16,41], and negative effects, such as feeling stuck in negative work situations [42]. Embeddedness influences how work factors influence the private home role or vice versa. It limits or accelerates whether WHC increases turnover and explains how employees may respond to WHC [8,16,41]. For example, although employees perceive high WHC, they have low turnover intentions when work embeddedness is high. From a resource conservation perspective [18,19], embeddedness in one role influences the motivation to acquire, invest, and protect resources within this role [26], hindering the fulfillment of obligations in other roles. Thus, conflicts between the work and private home roles arise partly from managing a fixed pool of resources [16].

To determine different groups of WHE, we first conducted a literature review (see Table 2), revealing that previous research does not theoretically investigate the work-home embeddedness when perceiving WHC. Many investigations include work- and home-related control variables. Work-home embeddedness has positive and negative effects, depending on the dependent variable (see Table 2). In addition, the effects may interact, meaning that work embeddedness influences private home embeddedness and vice versa [16,41].

Therefore, we focus on total work-home embeddedness to identify individuals who are embedded in the private home and work role. This allows us to examine whether total work-home embeddedness influences work-home boundaries and work-home conflict. To identify different groups of WHE, we draw on the household life cycle [43], which is "based on the assumption that human life is characterized by passing through a certain sequence of stages, and suggests that relations exist between life stage, demographic and behavioral characteristics of individuals" (p. 69). Such stages concentrate on factors such as household members, living situation, age, gender, and the number and ages of children [44,45]. A recent study on role conflict extends the factors for private home life, such as hours, commitment, and involvement and work, such as hours, involvement, and status [3].

To determine the WHE groups, we use a propensity score (PS) technique. It calculates the probability that a participant receives an intervention or treatment, given a vector of variables, such as WHE characteristics [22]. In our context, the probability of treatment is the degree to which an employee is exposed to a conflict between work and home. We compute a propensity score [46] by selecting twelve characteristics of WHE that determine the probability score (see Table 2). We use a regression model to calculate the propensity score (see the Appendix, propensity score). Third, based on the propensity score, we derive three groups: low WHE probability group (Low WHE), medium WHE probability group (Medium WHE), and high WHE probability group (High WHE). We use a percentile group approach [47] to assign the participants. Those with a PS lower than the 33rd percentile are assigned to the Low WHE group; those between the 33rd and the 66th percentiles are assigned to the Medium WHE group, and those above the 66th percentile are assigned to the High WHE group. As a result, we receive three groups of equal size, which are characterized by different work-home embeddedness characteristics. Following the resources perspective, we assume that the higher WHE, the higher WHC. Table 1 gives an overview of the characteristics of each group, which are described as follows.

**Low WHE group:** These employees are primarily women who are, on the average, 40 years old. Most of them live with a partner in a two-person household. They have no children under six years old living at home, and most have no children older than six at home, but every third one has one or two children. Women in this group have spent fewer family hours and show lower involvement with family and less commitment to family time than the other two groups. In addition, they are less involved in their jobs than the other groups; most work full-time at 40.2 hours per week. Taken together, this group contains older women with no children who are only lightly embedded with private home life and work.

**Medium WHE group:** This group contains nearly equal numbers of

<sup>2</sup> Also termed on-the-job and off-the-job embeddedness [16,21].

**Table 1**  
Work-home embeddedness groups

WHE factors	Definition	Unit	Low WHE (n = 287)	Medium WHE (n = 285)	High WHE (n = 287)
Age	Chronologically younger individuals [48]	Mean (SD)	40 (12.62)	33 (7.15)	30 (5.17)
Children under 6 years living at home	Number of children younger than six years old living in the same household [43].	Mean (SD)	0.0 (0.18)	0.7 (0.52)	1.3 (0.48)
		0	96.5	35.1	1.0
		1	3.5	62.1	71.4
		2	0	2.8	26.8
		3	0	0.0	0.7
Children over 6 years living at home	Number of children older than six years old living in the same household [43].	Mean (SD)	0.7 (1.12)	0.7 (1.03)	0.5 (1.17)
		0	63.4	55.1	73.9
		1-2	27.9	40.0	19.5
		3-5	8.4	4.6	5.2
		>6	0.3	0.4	1.4
Employment status	Whether the employees work full- or part-time.	Part	17.8%	12.3%	8.0%
Gender	The sex of the employees.	Full	82.2%	87.7%	92.0%
		Female	70.0%	45.3%	16.7%
Family hours	"The number of hours spent per week on family- and home-related duties such as housework and child care" ([49], p. 62).	Male	30.0%	54.7%	83.3%
		Mean (SD)	25.5 (22.87)	30.3 (25.50)	32.6 (22.12)
Family involvement	"The degree to which one's family is central to one's self-concept or sense of identity" [50].	Mean (SD)	5.7 (1.28)	5.9 (1.08)	5.9 (0.89)
Family time commitment	Parenting activities; the percentage of child-related tasks that employees perform [51]	Mean (SD)	13.3 (26.56)	49.7 (34.16)	62.1 (31.20)
Job involvement	"The degree to which one's job is central to one's self-concept or sense of identity" ([50], p. 69).	Mean (SD)	4.5 (1.41)	5.0 (1.22)	5.8 (0.93)
Living situation	Whether the employees live alone or together in a household [43].	Living alone	12.0%	13.0%	8.4%
		Living together	88.0%	87.0%	91.6%
		Mean (SD)	2.7 (1.32)	3.8 (1.38)	4.1 (1.28)
Members live in your household	Number of people living in the same household [43].	Median	2.0	4.0	4.0
Work hours per week	Average hours worked per week.	Mean (SD)	40.2 (9.43)	39.7 (14.09)	43.9 (15.48)

Note: WHE = work-home embeddedness.

women and men. They are, on the average, 33 years old, and most of them live with a partner in a four-person household. On the average, they have one child under six years old living at home. The majority of people in this group have no children older than six years living at home, but every fourth one has one or two children. Participants in this group have spent fewer family hours and show lower involvement with family and less commitment to family time than the High WHE group. Moreover, they are less involved in their jobs than the High WHE group. They primarily work full-time at 39.7 hours per week. Taken together, the group contains women and men with one young child who are moderately embedded in private home life and work.

**High WHE group:** These employees are primarily men, who are, on the average, 30 years old. They live with a partner in a four-person household. They have one or two children under six years old living at home. The majority have no children older than six years living at home, but every second one has one to two children. Men in this group have spent more family hours and show more involvement with family and greater commitment to family time than the other two groups. In addition, they are more involved in their jobs than the other two groups. They mostly work full-time at 43.8 hours per week. Taken together, the group contains young men with young children highly embedded in private home life and work.

#### 2.4. IS-related Findings 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 [52]). Various examinations offer insights into WHC among IT professionals [7,8]. An early examination assumes that WHC is crucial for work exhaustion and turnover intention. Similarly, a time difference, the frequency of communication, and the number of distributed locations might influence WHC [53]. Other antecedents of WHC, such as a time difference with remote members or extent of use regarding agile

methodologies, and consequences, such as turnover intentions and performance, are investigated [30]. Research also indicates that WHC does not always lead to work exhaustion related to IS career experiences [54]. Other studies focus on embeddedness in work groups among teleworkers, their effect on professionals, and its impact on WHC [8]. In the context of mobile usage among teleworkers, the research investigates the effect of work/nonwork boundary management on social and professional isolation [55].

Other research studies in the context of WHC concentrate on IT use in general. An early study examines the differences in WHC between after-hours telecommuters and core working-hours telecommuters [56]. Their findings indicate that gender and after-hour telecommuting significantly influence WHC. They also compare different work arrangements (dual-career vs. traditional-career) and gender (men vs. women) and find intragroup and intergroup differences. Another study has found that the characteristics of technology influence WHC and lead to exhaustion. The results show that presentism positively influences WHC, which in turn influences, among other things, exhaustion. They find that WHC can also result from employees using the same technology for work and private life [4]. A recent study [57] examines the effect of interruption overload of work-related technology use in terms of the work-home conflict. They concentrate on WHC and assume that interruption overload leads to WHC, which reduces the use of work-related technology. Benlian [14] argues that the spillover effect from work to private life in the context of technostress is not always negative and introduces several work-home boundary moderators, which mortar the transitions between work and private home roles. A practitioner-oriented examination demonstrates that using mobile devices can influence WHC [40]. Scholars develop a framework of different perceptions of WHC and propose a set of managing strategies. They identify three WHC perceptions: one that separates work and private life, one that views work as overlapping with private life, and one that perceives this domain as integrated [40]. Turel et al. [58] indicate that technology addiction is

one cause of WHC. A study demonstrates the effect of the extent of after-hours work-related interruption on the work–home boundary (i.e., psychological transition), leading to work and nonwork exhaustion and work and nonwork performance [6]

Table 2 shows that the previous literature explains well how WHC leads to negative organizational consequences. However, it lacks a holistic view of the impact of IT use on work–home boundary reduction and employees’ work–home embeddedness. Few studies consider work–home boundary factors and work–home embeddedness factors such as the number of children at home, involvement in private home life, and working hours. Thus, we focus on IT-induced work–home boundary reduction and identify different work–home embeddedness groups to integrate each employee’s environmental demands structurally and show whether WHE accelerates the influence of WHC. Moreover, the literature review shows that almost all studies focus on one specific aspect of WHC [4,7,8]. We complement that by considering different facets of WHC [1] in terms of T-WHC, S-WHC, and B-WHC. Based on the literature review, we identified relevant consequences of WHC. Empirical and anecdotal evidence shows that a significant consequence of WHC is exhaustion [4,7,29]. In addition, organizational commitment and turnover intention have been identified as adverse job

outcomes of WHC for organizations [7,29,30]. We aim to analyze the effect between IT-WHBR, WHC, job outcomes, and the moderating role of work–home embeddedness.

### 3. Research Model

We use COR theory to explain the interference between the work and the private home and differentiate between time-, strain-, and behavior-based WHC. We start from the boundary theory to theorize IT-induced work–home boundary reduction and from embeddedness theory to introduce work–home embeddedness groups. By doing so, we are able to take an ensemble perspective on the IT artifact [60]. This perspective focuses on interactions between individuals and technologies during IT use by considering additional resources such as cultural and social factors [60].

High-permeability work–home boundaries increase WHC [33]. We assume that IT-induced work–home boundaries increase T-WHC, S-WHC, and B-WHC. WHC influences multiple job outcomes in the WHC context [3,7] and focus on work exhaustion [3,7,25], organizational commitment [3,7], and turnover intention [7,61]. We examine the impact of T-WHC, S-WHC, and B-WHC on work exhaustion and

**Table 2**  
Overview of WHC dimension in previous IS research

Authors <sup>‡</sup> (sorted by year)	Work–home boundary	WHC				WHE factors	Dependent variable
		Not specified	Time	Strain	Behavior		
[56]		✓				Hours worked at office and home responsible for childcare, self-related activities	—Role overload —Spillover of interference from work to family —Spillover of interference from family to work
[59]		✓					—Career choice in IT —Persistence in IT
[7]		✓				Tenure at organization, age, promotability, marital status	—Work exhaustion —Organizational commitment —Turnover intention
[53]		✓					—Work-life conflict
[4]		✓				Negative affectivity	—Strain
[58]		✓					—Work-family conflict
[40]						NA	—Work-life relationship
[54]		✓				Age, gender, negative affectivity, tenure in IS profession	—Exhaustion from IS career experience —Social isolation —Professional isolation
[55]	—Work-nonwork boundary						—Work exhaustion —Nonwork exhaustion —Nonwork performance —Work performance
[6]	—Work-nonwork boundaries —Psychological transition					Polychronicity orientation, age, gender, number of children under 18	—Turnover intention —Performance
[30]		✓				Locational dispersion, time differences with remote members, flexible work schedule, extent of use of agile methodologies, supervisors support, task dependency with remote members, requirements instability and diversity, technology diversity	
[14]	—Work–home role integration —Perceived organizational support in work–home boundary management	✓				Gender, age, number of children, organizational tenure, job autonomy, work–home role integration, support in work–home boundary management	—Partnership satisfaction
[57]		✓				Tenure, compatibility, telepresence, family time	—Work-related technology use
[8]		✓				Gender, race, education, age, organizational tenure,	—Work-life conflict —Organizational citizenship behavior

Note: ✓ = has been considered; not specified = WHC has been considered as an aggregated construct; WHE = work–home embeddedness; empty cell = dimension has not been considered; ‡ = overview focuses on the Senior Scholars’ List of Premier Journals.

organizational commitment and analyze their effects on turnover intention. We understand *work exhaustion* as the depletion of emotional and mental resources in the workplace [6,7,62]. *Organizational commitment* is the extent of involvement and identification with an organization [7], and *turnover intention* reflects an employee’s deliberate and conscious desire to resign from his or her job and leave a company [63]. Most importantly, we suggest the moderating effects of the three *work–home embeddedness* groups for each effect. The constructs and their definitions are summarized in Table 3.

To develop our research model, shown in Fig. 2, we first propose the effects of IT-induced work–home boundary reduction on the different aspects of WHC and the moderating roles of WHE groups in these relationships. Subsequently, we concentrate on the effect of WHC on job outcomes and look at the moderation of the WHE groups. Finally, we hypothesize dependences among the different job outcomes—organizational commitment, work exhaustion, and turnover intention.

3.1. Effect of IT-Induced Work-Home Boundary Reduction on WHC and WHE Moderation

We assume that IT-WHBR increases the T-WHC. Spatial or temporal conditions no longer restrict employee roles. The use of mobile devices allows employees to use work-related resources at nearly any time and place, blurring the boundaries between work and private home roles [40], and increases boundary permeability. High-permeability work–home boundaries increase role transitions, increasing WHC [33]. If the work and home boundary is reduced due to IT use, employees can more easily allocate time to the work role that should be spent in the private home role. For example, when using IT reduces the boundary between work and home by enabling employees to work remotely, they can spend their time on work duties even though they are spatially in the private home role (H1a).

We assume differences between the Low WHE and the other groups because employees in the Medium WHE and High WHE groups are more career-oriented [4] and have more home demands due to their children. This often comes with the commitment to use IT late in the evening, in their private home role, for work purposes [64]. This increases the possibility of allocating time to the work role, which is time that employees cannot spend in private home life, resulting in time-based work

Table 3  
Definitions of constructs

Constructs	Definitions
IT-WHBR	IT-induced work–home boundary reduction is an increase in the permeability of the lines of demarcation that separate the work role from the private home role due to IT use.
T-WHC	T-WHC results when the work role and the private home role compete for an employee’s time [1,2].
S-WHC	S-WHC occurs when job demands exceed an employee’s resources, and they cannot invest as much energy into their private life as they would like [1,2].
B-WHC	B-WHC arises when the work role requires different behavioral patterns than the private home role [1,2].
Work exhaustion	Work exhaustion is the depletion of emotional and mental resources in the workplace [6,7,62].
Organizational commitment	Organizational commitment is the extent of involvement and identification with an organization [7].
Turnover intention	Turnover intention reflects an employee’s deliberate and conscious desire to resign from his or her job and leave the company [63].
WHE	Work–home embeddedness is the degree to which employees are embedded in their work and home lives, as reflected in characteristics such as number of children or involvement in their job [21,26].

Note: IT-WHBR = IT-induced work–home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC; WHE = work–home embeddedness.

conflict. Medium or high embeddedness changes the effect of IT-WHBR on T-WHC because they face more demands from work and private home roles (H1b<sub>1</sub> and H1b<sub>2</sub>). The reasons for the different effects on the medium- and high-embeddedness groups are similar. The Medium WHE group perceives fewer demands than the High WHE group—especially when employees from the High WHE group have young children. Therefore, the High WHE group transitions more between roles, so the effect of IT-WHBR on T-WHC is stronger than in the Medium WHE group (H1b<sub>3</sub>).

H1a: The higher the IT-WHBR, the higher the T-WHC.

H1b: The effect of IT-WHBR on T-WHC is lower for the Low WHE group compared with (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.

Because the permeability of the boundaries between work and private home roles is increased by IT use [4], the strain from the work role can more easily transmit to the private home role. Employees sometimes use their private smartphones for work, making it almost impossible to compartmentalize work activities and private activities. Smartphones might also ring when employees spend time in the private home role [65]. When IT use reduces work and home boundaries when working at home or on vacation, this requires emotional resources, bringing work-related depletion into the private home role ([66]; H2a).

We assume that the Low WHE group shows a lower effect of IT-WHBR on S-WHC than the other groups because these latter groups are more involved in their jobs and use IT for work purposes more often in private situations. Consequently, the tensions or anxiety resulting from work are more easily transmitted to the private home role because employees occupy the same space for work and private purposes ([67]; H2b<sub>1</sub> and H2b<sub>2</sub>). Employees in the High WHE group are more involved in their jobs and their private home life than those from the Medium WHE group. For them, the transmission of strain from work to the private home role is stronger because these employees have fewer resources to accomplish more private home duties, so that the IT-WHBR has a stronger effect on S-WHC than in the Medium WHE group (H2b<sub>3</sub>).

H2a: The higher the IT-WHBR, the higher the S-WHC.

H2b: The effect of IT-WHBR on S-WHC is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.

Inappropriate behavior in the private home role might occur because the boundaries between work and private home roles are blurred because of IT use. Work and private home roles are blended because of IT use, so there is no longer a clear physical separation between them [37]. This shortens or eliminates the phase when employees switch their behavior between the roles. Commuting serves as an adaptation phase between personal and work roles [68]. Prior studies show that using work-based IT in the household or on vacation creates B-WHC because work behavior is needed for such IT use, which is, however, not appropriate in the private home role ([66]; H3a).

The differences between the Low WHE group and the other groups can be explained by the fact that employees in the latter two groups are more embedded in their jobs and use more IT for work purposes in their private circumstances. Using IT for work purposes connects the employees with their work behavior, and as they then work and live in the same place [67], they increase the use of inappropriate behavior in the private home role. For example, suppose Bob uses his work laptop at home to make a late video call and directly afterward tries to mediate a fight between his children. In that case, he might behave inappropriately. Hence, due to the different role demands, the effect of IT-WHBR on B-WHC differs between the Low WHE and the other two groups (H3b<sub>1</sub> and H3b<sub>2</sub>). We assume that there is a difference between the Medium WHE and the High WHE groups. As employees in the High WHE

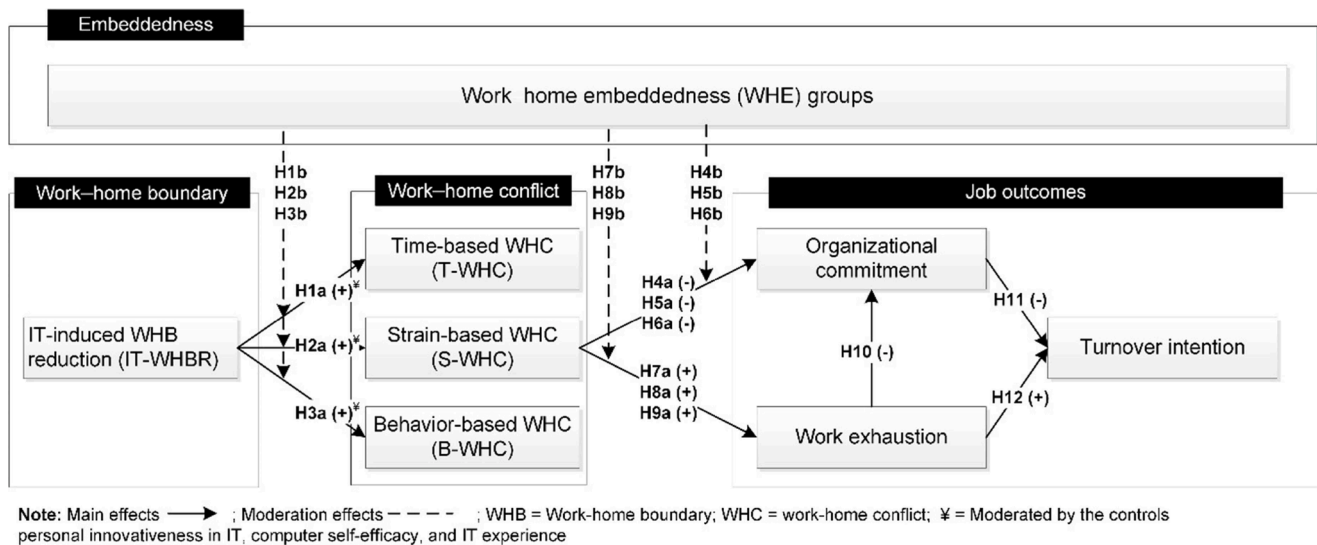


Fig. 2. Research model

group are more involved in their jobs and more involved in their private home life, actions for the work role slip into the private home life situation [69]. For example, using work behavior in private situations might happen more often when IT for work purposes is used at home. Work and life activities occur in the same space (H3b<sub>3</sub>).

*H3a: The higher the IT-WHBR, the higher the B-WHC.*

*H3b: The effect of IT-WHBR on B-WHC is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

### 3.2. Effect of WHC on Job Outcomes and WHE Moderation

IS literature reveals a positive relationship between WHC and organizational commitment, so that high WHC leads to lower organizational commitment [3,7]. This relationship can be explained by COR theory, which assumes that resources are scarce and finite, so that resources devoted to one role limit the resources available for other roles [16,28]. Employees with a high level of WHC are more likely to feel overwhelmed by their inability to meet job demands and experience lower levels of commitment to their organization [3,7,58].

When time resources are so scarce that employees have to spend more time in the work role and are unable to fulfill their obligations in the home role [1,2], they blame their organization [70], which lowers organizational commitment. Employees with high organizational commitment have goals similar to those of the organization and feel that they are part of the organization [71]. When T-WHC is high, these similar values are disrupted because employees must devote too much time to their work role that they want to spend in their private home role. Thus, the goals of the employee and the organization drift apart, and organizational commitment decreases (H4a).

The influence of T-WHC on organizational commitment is lower for Low WHE than for Medium WHE. The time conflict will only slightly disrupt the similar goals of employees and organization at Low WHE, because demands from the private home role are lower than the Medium WHE group: they have no children and are only weakly embedded in work and home (H4b<sub>1</sub>). The reasons for the different effects between Low WHE and High WHE are similar. The Low WHE group is less embedded in the work and home roles than the High WHE group, so they face fewer demands [20]. T-WHC will not disrupt similar values because employees in the Low WHE group have more resources to manage the situation. Identity with the company is less affected than in the High WHE group (H4b<sub>2</sub>). It is assumed that the effect between T-WHC and

organizational commitment differs for the Medium WHE and High WHE groups. The effect is stronger for the High WHE group because these employees have very high demands from work and home roles: they are young and have small children. When employees from the High WHE group work longer hours, it will disrupt their identification with the organization more than for those with fewer work and private home life obligations in the Medium WHE group (H4b<sub>3</sub>).

*H4a: The higher the T-WHC, the lower the organizational commitment.*

*H4b: The effect of T-WHC on organizational commitment is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

S-WHC reduces organizational commitment. One explanation is that resources devoted to one role limit the resources available for other roles [16,28]. Employees with high S-WHC have high demands and low resources, so they may feel overwhelmed by their failures, which reduces commitment [3]. When employees recognize that they cannot meet all demands, they become overwhelmed, which reduces the sense of commitment to stay in the organization [71] because they are not meeting their expectations (H5a).

The effect of S-WHC on organizational commitment is lower for the Low WHE group than for the Medium WHE group. The embeddedness within the Low WHE groups is lower, so employees have fewer demands in both roles [20]. Additional demands from private home life, such as children or work, will increase the effect of S-WHC on organizational commitment. As the Medium WHE group faces more demands, they have fewer resources to manage the situations with S-WHC [19] and therefore perceive a stronger effect on identifying with the organization (H5b<sub>1</sub>). It is also hypothesized that S-WHC will have a smaller effect on employees in the Low WHE group than on those in the High WHE group (H5b<sub>2</sub>). Employees from the High WHE group face more demands in both roles, so they have significantly fewer resources left to manage the strain [19], so that they are alienated from the organization. They feel less committed to their organization because this negative effect is attributed to the external role [70]. We also theorize a difference between the Medium WHE and High WHE groups such that the effect is lower for the former (H5b<sub>3</sub>).

*H5a: The higher the S-WHC, the lower the organizational commitment.*

*H5b: The effect of S-WHC on organizational commitment is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE*



groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.

When employees behave in the private home role as if they were in the work role [1,2], their commitment to the organization decreases. When employees behave aggressively in the private home role, for example, when interacting with their children, they blame the work role [70], which leads to a disruption of the similar goals between the employee and the organization, reduces identification with the organization, and thus reduces the obligation to stay within the organization [71]. WHC is attributed to the work role [70]. Thus, when employees believe that work is responsible for misbehavior, they feel less identified with and committed to their organization (H6a).

The influence between B-WHC and organizational commitment is lower for the Low WHE group than for the Medium WHE group. Employees who are less embedded in work and home face fewer demands from each role [20], leaving them with more resources to cope. Thus, when employees are able to manage, they have fewer negative consequences [72] and do not directly question their commitment to their organization. Furthermore, employees in the Low WHE group do not have children, so the misbehavior may not be perceived as less threatening, leading to a lower effect of organizational commitment (H6b<sub>1</sub>). We expect the effect between B-WHC and organizational commitment to differ between the Low WHE and the High WHE groups. Employees in the High WHE group face more demands and have fewer resources to cope. They also have young children, so the misbehavior is rated as more significant, leading to a stronger negative effect on organizational commitment (H6b<sub>2</sub>). B-WHC has a lower effect on organizational commitment for employees in the Medium WHE group than on those in the High WHE group. Although employees from both these groups have children, the High WHE group has younger children, so the misbehavior may be even worse, so that attribution to the work role is even stringer and employees are less committed (H6b<sub>3</sub>).

*H6a: The higher the B-WHC, the lower the organizational commitment.*

*H6b: The effect of B-WHC on organizational commitment is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

Employees who spend more time in the work role have less time to fulfill their duties in their private home role and have less time to recover from work. This causes work exhaustion [66]. Competition between the work and private home roles for the employee's time costs mental resources, reduces recovery time, and increases employees' work exhaustion (H7a; [19]).

Regarding the WHE groups, we assume that the Low WHE group shows a lower effect of T-WHC on work exhaustion than the other groups. COR theory assumes that we have various resources that we can spend on different activities [19]. As time is a resource, employees in the Medium and High WHE groups must spend more time on private home life duties, as they live in larger households and have more children. These employees more often perceive conflicts over spending their time on work or private home duties, so the effect of T-WHC is stronger in these groups than in the Low WHE group (H7b<sub>1</sub> and H7b<sub>2</sub>). We assume that the Medium WHE group shows fewer effects of T-WHC and work exhaustion than the High WHE group because the High WHE employees face more demands, such as young children who require time for parenting [1] than those in the Medium WHE group (H7b<sub>3</sub>).

*H7a: The higher the T-WHC, the higher the work exhaustion.*

*H7b: The effect of T-WHC on work exhaustion is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) the High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

Work is responsible for conflicts when employees bring work-based

tensions into the private home role and therefore cannot fulfill their responsibilities in this role [70]. As strain perceived in the work role is responsible for this conflict [1,32], employees blame their work for this situation. This more likely leads to work exhaustion because they struggle with work-based tensions and the strain-based conflict between work and their private home roles. From a COR perspective [19], employees with high S-WHC have high job demands and low resources, indicating a depletion of emotional and mental resources (H8a).

Employees from the Medium WHE and High WHE groups are simultaneously and highly involved in their private home life and their work, so the strain from work can more easily be transmitted to the private home role. This means that the Low WHE group shows less effect of S-WHC on work exhaustion than the other groups. Employees in the Low WHE group have no children, so the duties in the private home role are lower. If they are stressed from work, they can more easily recover at home [73] than the employees in the other groups, who fulfill their parenting duties (H8b<sub>1</sub> and H8b<sub>2</sub>). We assume that the Medium WHE group shows less effect of S-WHC on work exhaustion than the High WHE group because the employees in the latter group have more young children and are more involved in private home life and work, which results in more demands and fewer resources. For them, transmitting stress to the private home life has a stronger effect on work exhaustion ([3]; H8b<sub>3</sub>).

*H8a: The higher the S-WHC, the higher the work exhaustion.*

*H8b: The effect of S-WHC on work exhaustion is lower for the Low WHE group than for (b<sub>1</sub>) Medium WHE and (b<sub>2</sub>) High WHE groups and lower for Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

Specific behavior in the work role might not be consistent with expectations of behavior in the private home role [1]. The conflict between work and private life is attributed mainly to the work role to maintain a positive self-image [70], increasing their work exhaustion. The conflict may occur when employees behave in the private home role as if they were in the work role. When employees behave too objectively or strictly at home, they blame their work role, which costs resources and increases work exhaustion. Inappropriate behavior in one role needs further resources to manage the conflict, so fewer resources are available (H9a) [19].

Regarding the WHE groups, we assume that the Low WHE group shows a lower effect of B-WHC on work exhaustion than for the other groups because employees in the Low WHE group are less involved in their jobs. Their work behavior is not their dominant behavior. These employees have not developed habitual work behavior [74,75], so it is less likely that an employee would habitually behave in their private home role as they do at work ([69]; H9b<sub>1</sub> and H9b<sub>2</sub>). We assume differences between the Medium WHE and High WHE groups. Employees in the Medium WHE group have fewer young children and more children who are older, so any aggressive behavior at home [2] has less negative effects because older children know how to handle this behavior better, so there is less effect of work exhaustion (H9b<sub>3</sub>).

*H9a: The higher the B-WHC, the higher the work exhaustion.*

*H9b: The effect of B-WHC on work exhaustion is lower for the Low WHE group than for (b<sub>1</sub>) the Medium WHE and (b<sub>2</sub>) High WHE groups, and it is lower for the Medium WHE group than for (b<sub>3</sub>) the High WHE group.*

### 3.3. Job Outcomes

Work exhaustion lowers organizational commitment [7]. High work exhaustion is characterized by low levels of mental resources caused by adverse factors such as work overload or WHC [7]. COR [19] suggests that employees who have low resources cannot fulfill their expected obligations. Organizational commitment is the degree of identification with an organization [7], leading to assimilation and similar values between employees and the organization [76]. Suppose employees are

unable to fulfill their obligations because they are exhausted from work. The shared values between the organization and employees will be reduced as the organization will be blamed for the high exhaustion with work (H10).

*H10: The higher the work exhaustion, the lower the organizational commitment.*

Organizational commitment reduces turnover intentions [7,77]. A high level of identification with the organization reflects assimilation of an aspect, property, or attribute of the organization, resulting in similar values between employees and the organization [76]. When employees feel a high level of identification with the organization, the intention to leave the organization decreases because the organization and employees have similar values (H11).

*H11: The higher the organizational commitment, the lower turnover intention.*

Work exhaustion is one specific reason for high intentions to leave the current organization [7,78]. Employees with high work exhaustion have high work demands and low resources. COR suggests that employees aim to protect their resources [19]. Employees try to cope with the situation by avoidance [72,79], distancing themselves from such situations [79]. Developing intentions to leave the current organization is one specific strategy for avoiding high work exhaustion (H12).

*H12: The higher the work exhaustion, the higher the turnover intention.*

#### 4. Research Methodology

##### 4.1. Sampling Strategy and Participants

Our sampling strategy is based on a crowdsourcing approach using Amazon Mechanical Turk (mTurk). The literature provides evidence that mTurk is a valid sampling strategy [80]. It is considered equivalent to other sampling strategies [81] because it enables researchers to select various industries and organizations. Also, we ensured that the limitations of online panels, such as attentiveness [81], were overcome. By doing so, we follow previous researchers [82,83] who used different methods such as reverse-coding, randomized order of items, and safety check questions (e.g., “I use IS for my work,” “I am employed,” “Please indicate your highest educational level,” “Please click on ‘strongly disagree’”). We received complete survey responses from 862 employees who had a current part- or full-time contract. The majority currently had a job and were between 25 and 54 years old. On the average, the participants had been working 33.4 months (2.8 years) at their current organization, and they had college or university degrees. The demographics of the participants are listed in Table 4. Nearly half of the

**Table 4**  
Study participants’ demographics (N = 862)

Gender (%) (M = 2.56; SD = 0.49)	Age (%) (M = 34.5; SD = 9.80)	Highest education (%)
Men	56.0	19-24 5.4 Less than high school 0.2
Women	44.0	25-34 58.4 High school 3.4
Organizational tenure M (SD)	35-44 21.3	Some college 10.7
Tenure in month (31.7)	45-54 8.5	Bachelor’s degree 53.7
Employment status (%) (M = 2.13; SD = 0.33)	55-64 5.2	Master’s degree 30.3
Unemployed	0.0	65 and older 1.2 Doctoral degree 1.7
Full time	87.3	
Part-time	12.7	

participants worked for employers in the sectors of electrical engineering/information technology (IT)/data processing (20.3%), financial services (16.7%), and the education and training (12.1%) industry. One-fifth of the participants work in the field of IT (19.5%), 13.8% in the field of technical professions/engineering, and 13.1% in the field of finance, accounting, and controlling (Appendix, Table A1).

##### 4.2. Measures

We used constructs that have been used in previous research. We measured the facets of WHC—time, strain, and behavior [2]. IT-WHBR is measured on a single-item construct—“using information and communication technologies blurs the boundaries between my job and my home life.” Such single-item constructs are validated measures in partial least squares (PLS) structural equation modeling (SEM; [84]). For work exhaustion and turnover intention, we used the scale proposed by Ahuja et al. [7]. Regarding the work-life situation, we used the measures for capturing family and job involvement, family time commitment, and family hours provided by Venkatesh et al. [3]. To measure the additional work-life characteristics—age, gender, living situation, work hours, employment status, members living in the household, and the number of children under and over six years old living at home—we used single items, in line with past research. All items are summarized in Appendix Table A4.

#### 5. Research Results

To analyze the research model, we followed a partial least squares path (PLS) approach using SmartPLS 3.3.3 [85]. Before presenting our results, we checked that our data were not subject to common method bias (CMB) or measurement invariance (see Appendix, measurement invariance). Also, we ensured that the research model was valid and reliable, following generally accepted thresholds of validity and reliability.

##### 5.1. Measurement Model

*Content validity:* To ensure content validity, we used items from prior research articles (see Appendix Table A4), and we discussed each item with our project team.

*Indicator reliability:* This reflects the rate of the variance of an indicator from the latent variables. To ensure that the indicators explain 50% or more of the variance, each value should be at least 0.707 [86]. Items that did not meet this threshold were removed from the model. Table 5 shows that this condition is fulfilled, and each loading is significant at a 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 must be at least 0.5 [87]. Both criteria are fulfilled (see Table 5). Also, the values for Cronbach’s  $\alpha$  values for all constructs in the model are higher than 0.7 (see Appendix Table A4).

*Discriminant validity:* This reflects the extent to which items differ from other items [88]. The square root of AVE should be greater than the corresponding construct correlations [87,89]. Table A3 in the Appendix shows that the square roots of the values are greater than the corresponding correlations between the constructs. Henseler et al. [90] state that 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 was fulfilled. As all values are lower than the threshold, and the bootstrapping approach shows that HTMT is, in each sample, significantly different from 1, we can state that discriminant validity using HTMT 0.85 is not an issue in the present research. We thus conclude that our measurement model is valid.

**Table 5**  
Mean, standard deviation, AVE, and CR

		All Mean (SD)	Low WHE Mean (SD)	Medium WHE Mean (SD)	High WHE Mean (SD)	AVE	CR
1	IT-WHBR	4.17 (1.58)	3.47 (1.59)	4.07 (1.44)	4.98 (1.29)	NA	NA
2	S-WHC	3.06 (1.09)	2.67 (1.07)	2.98 (1.05)	3.53 (0.96)	0.622	0.767
3	T-WHC	3.29 (0.98)	2.85 (1.02)	3.27 (0.96)	3.77 (0.74)	0.643	0.844
4	B-WHC	3.14 (1.09)	2.72 (0.99)	3.11 (1.01)	3.60 (0.74)	0.603	0.820
5	Organizational commitment	5.13 (1.19)	5.20 (1.11)	5.00 (1.37)	5.05 (1.13)	0.705	0.922
6	Work exhaustion	3.98 (1.65)	3.44 (1.68)	3.87 (1.59)	4.64 (1.44)	0.766	0.907
7	Turnover intention	3.54 (1.53)	3.04 (1.64)	3.49 (1.54)	4.08 (1.21)	0.681	0.864
IT-related controls							
8	IT experience	1.79 (1.07)	1.51 (1.03)	1.68 (0.99)	2.18 (1.09)	0.784	0.916
9	Personal innovativeness in IT	5.33 (1.15)	4.94 (1.33)	5.22 (1.06)	5.62 (0.93)	0.765	0.907
10	IT self-efficacy	5.25 (1.12)	5.25 (1.23)	5.25 (1.15)	5.22 (0.95)	0.659	0.886

Note: AVE= average variance extracted; CR = composite reliability; NA = not applicable; WHE = work-home embeddedness; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.

**5.2. Structural Model**

To validate the structural model, we use the coefficient of determination ( $R^2$ ) and the significance levels of the path coefficients. Regarding the model fit, Henseler et al. [91] suggest using the standardized root-mean-squared residual (SRMR). Since the value of 0.07 is lower than the recommended value of 0.08, a good fit can be found. The results in Table 6 show that the work of IT-WHBR significantly affects T-WHC, S-WHC, and B-WHC so that H1a, H2a, and H3a are supported. We found a significant effect of T-WHC on work exhaustion but a nonsignificant effect between T-WHC and work exhaustion, so H4 is supported, and H7 is not supported. S-WHC has a significant positive impact on work exhaustion and organizational commitment, so H5 is supported and H8 is not supported. The results show that B-WHC increases work exhaustion but has no significant effect on organizational commitment, which supports H6 and does not support H9. Work exhaustion has a negative effect on organizational commitment, which supports H10. Organizational commitment significantly decreases turnover intention, supporting H11, and work exhaustion increase turnover intention, supporting H12.

Regarding the coefficient of determination ( $R^2$ ), we show that 36.2% of the variance of T-WHC, 34.5% of that of S-WHC, and 31.1% of that of B-WHC is explained by IT-WHBR. Furthermore, we explain 42.1% of the variance of work exhaustion, 4.1% of the variance of organizational commitment, and 36.1% of the variance of turnover intention.

**5.3. Multigroup Analysis**

To validate the differences between the WHE groups, we used a multiple-group analysis (MGA; [92]). An MGA compares the structural model across different groups. It compares the groups in terms of a system of relations between several latent variables [92]. The omnibus test of group differences (OTG; [93]) was used as a preliminary assessment. The advantage of this test is that it allows simultaneous comparison of three or more groups instead of only pairwise comparisons, as in other MGA tests. OTG was run based on Chan's [94] procedure with 1,000 permutations and 5,000 samples. The results were significant for each model path. This indicates that there was at least one significant difference between groups, and this was the reason for other pairwise MGA methods [95]. We conducted a pairwise comparison of each path coefficient with the three WHE groups. For each comparison, we drew on the nonparametric PLS-MGA approach [92]. This approach compares each bootstrap estimate of one group with all other bootstrap estimates of the same parameter in the other groups. The results, summarized in Table 7, show that there are several differences between the WHE groups.

The results show that the relationship between IT-WHBR and T-WHC (#1) differs between the Low WHE and High WHE and the Medium WHE and High WHE groups, so H1b<sub>2</sub> and H1b<sub>3</sub> are supported. IT-WHBR and

S-WHC (#2) differ between the Medium WHE and High WHE groups, so H2b<sub>3</sub> is supported. The relationship between IT-WHBR and B-WHC (#3) differs between the Medium WHE and High WHE groups, so H3b<sub>3</sub> is supported. The relationship between T-WHC and organizational commitment (#4) differs significantly between Low WHE and Medium WHE, so that H4b<sub>2</sub> is supported. No difference in the relationship between S-WHC and organizational commitment (#5) could be found. The same is true for the relation between B-WHC and organizational commitment (#6). The relationship between T-WHC and work exhaustion (#7) is significantly higher for the Medium WHE group than for the High WHE group, so H7<sub>b</sub> is supported. The relationship between S-WHC and work exhaustion (#8) is not significantly different between the WHE groups. The relationship between B-WHC and work exhaustion (#9) is significantly different when the Low WHE and the Medium WHE groups are compared, and this supports H9b<sub>1</sub>. Taken together, Table 8 summarizes the results for all the hypotheses, and it shows which ones are supported.

**5.4. Post hoc Analysis**

We conducted a post hoc analysis of the indirect effects of IT-WHBR on job outcomes and of the moderating effects of IT-related control variables (IT experience, computer self-efficacy, and personal innovativeness in IT; see Appendix for more details). The mediation results indicate that the IT-induced work-home boundary reduction leads to WHC and indirectly influences job outcomes negatively by increasing the depletion of mental resources and the willingness to leave the job. The results of the moderation analysis of IT-related controls show that employees' IT characteristics reinforce the effect of IT-WHBR on WHC.

**6. Discussion and Implications**

The extant previous literature explains well the influence of IT use on WHC's adverse job outcomes, such as work exhaustion and turnover intentions. We complement this by explaining how IT use increases the permeability of the work-home boundary and how work-home embeddedness influences the relationships between IT-WHBR, WHC, and adverse job outcomes. Findings from our data show that IT-WHBR increases T-WHC, S-WHC, and B-WHC. It also indirectly influences job outcomes by increasing the intention to leave the organization. The results show that T-WHC, S-WHC, and B-WHC lead to work exhaustion, with only S-WHC increasing organizational commitment. Results also show that employees' work and life embeddedness significantly moderate the effect between work-home boundary, work-home conflict, and job outcomes.

**6.1. Theoretical Implications**

IT use influences WHC and its consequences. Previous research

**Table 6**  
Structural model and mediation

Relationship		β		
IT-WHBR -> T-WHC		0.577***		
IT-WHBR -> S-WHC		0.537***		
IT-WHBR -> B-WHC		0.466***		
T-WHC -> Work exhaustion		0.282***		
S-WHC -> Work exhaustion		0.318***		
B-WHC -> Work exhaustion		0.155***		
T-WHC -> Organizational commitment		-0.031 <sup>NS</sup>		
S-WHC -> Organizational commitment		0.204***		
B-WHC -> Organizational commitment		0.058 <sup>NS</sup>		
Work exhaustion -> Organizational commitment		-0.246***		
Organizational commitment -> Turnover intention		-0.305***		
Work exhaustion -> Turnover intention		0.485***		
<b>Dependent variable</b>		<b>R<sup>2</sup></b>		
T-WHC		0.332		
S-WHC		0.287		
B-WHC		0.216		
Organizational commitment		0.041		
Work exhaustion		0.421		
Turnover intention		0.362		
<b>Mediation</b>				
Independent variable	Mediators	Dependent variable	Indirect effect	95 confidence interval
IT-WHBR	T-WHC	Work exhaustion	0.163***	[0.120, 0.208]
IT-WHBR	S-WHC	Work exhaustion	0.171***	[0.129, 0.212]
IT-WHBR	B-WHC	Work exhaustion	0.072***	[0.042, 0.104]
IT-WHBR	T-WHC	Organizational commitment	-0.018 <sup>NS</sup>	[-0.075, 0.040]
IT-WHBR	S-WHC	Organizational commitment	0.109***	[0.060, 0.157]
IT-WHBR	B-WHC	Organizational commitment	0.027 <sup>NS</sup>	[-0.015, 0.069]
IT-WHBR	T-WHC, Work exhaustion	Turnover intention	0.079***	[0.057, 0.103]
IT-WHBR	S-WHC, Work exhaustion	Turnover intention	0.083***	[0.062, 0.105]
IT-WHBR	B-WHC, Work exhaustion	Turnover intention	0.03***	[0.020, 0.052]
IT-WHBR	T-WHC, Organizational commitment	Turnover intention	0.006 <sup>NS</sup>	[-0.012, 0.024]
IT-WHBR	S-WHC, Organizational commitment	Turnover intention	-0.034***	[-0.051, -0.018]
IT-WHBR	B-WHC, Organizational commitment	Turnover intention	-0.008 <sup>NS</sup>	[-0.022, 0.005]

Note: R<sup>2</sup> = coefficient of determination; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.  
NS  $p > 0.05$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

shows that IT use and its consequences change the allocation problem between work and home roles [4–6]. Our findings extend this knowledge by demonstrating that IT use increases the permeability of the work-home boundary. This contributes by providing an IT-induced work-home boundary reduction, which reflects the increase in the permeability of the boundaries separating the work role from the private home role due to IT use. We reveal that IT-WHBR influences T-WHC, S-WHC, and B-WHC and has indirect effects on job outcomes. We show that IT use also reduces the boundary between the two roles, increasing WHC.

The literature on WHC has focused on the antecedents and consequences of WHC [7,30]. We suggest that work-home embeddedness is essential for WHC. Some WHC examinations consider embeddedness factors such as the number of children, organizational tenure, and job autonomy (e.g., [14,30]) but do not treat these factors structurally and holistically. We contribute with three groups of work-home

**Table 7**  
Results of multigroup comparison tests of the household life cycle

#	Relationship	Comparison	β1	β2	βΔ1-2	p (PLS-MGA)
1	IT-WHBR -> T-WHC	Low WHE(1) vs. Medium WHE(2)	0.497	0.408	0.089	0.124 <sup>NS</sup>
		Low WHE(1) vs. High WHE(2)	0.497	0.646	-0.149	0.013*
2	IT-WHBR -> S-WHC	Medium WHE(1) vs. High WHE(2)	0.408	0.646	-0.238	0.000***
		Low WHE(1) vs. Medium WHE(2)	0.501	0.371	0.130	0.039*
3	IT-WHBR -> B-WHC	Low WHE(1) vs. High WHE(2)	0.501	0.539	-0.038	0.309 <sup>NS</sup>
		Medium WHE(1) vs. High WHE(2)	0.371	0.539	-0.168	0.021*
4	T-WHC -> organizational commitment	Low WHE(1) vs. Medium WHE(2)	0.383	0.289	0.094	0.146 <sup>NS</sup>
		Low WHE(1) vs. High WHE(2)	0.383	0.493	-0.110	0.089 <sup>NS</sup>
5	S-WHC -> organizational commitment	Medium WHE(1) vs. High WHE(2)	0.289	0.493	-0.204	0.010*
		Low WHE(1) vs. High WHE(2)	-0.205	0.010	-0.215	0.059 <sup>NS</sup>
6	B-WHC -> organizational commitment	Low WHE(1) vs. High WHE(2)	0.067	-0.205	-0.272	0.017*
		Medium WHE(1) vs. High WHE(2)	0.067	0.010	-0.057	0.346 <sup>NS</sup>
7	T-WHC -> work exhaustion	Low WHE(1) vs. Medium WHE(2)	0.178	0.335	-0.158	0.104 <sup>NS</sup>
		Low WHE(1) vs. High WHE(2)	-0.031	0.178	0.208	0.048*
8	S-WHC -> work exhaustion	Medium WHE(1) vs. High WHE(2)	-0.031	0.335	0.366	0.004***
		Low WHE(1) vs. Medium WHE(2)	-0.030	0.018	-0.047	0.339 <sup>NS</sup>
9	B-WHC -> work exhaustion	Low WHE(1) vs. High WHE(2)	0.126	-0.030	-0.156	0.101 <sup>NS</sup>
		Medium WHE(1) vs. High WHE(2)	0.126	0.018	-0.108	0.194 <sup>NS</sup>
10	T-WHC -> work exhaustion	Low WHE(1) vs. Medium WHE(2)	0.383	0.076	0.306	0.001**
		Low WHE(1) vs. High WHE(2)	0.403	0.383	-0.020	0.419 <sup>NS</sup>
11	S-WHC -> work exhaustion	Medium WHE(1) vs. High WHE(2)	0.403	0.076	-0.327	0.000***
		Low WHE(1) vs. Medium WHE(2)	0.312	0.355	-0.043	0.320 <sup>NS</sup>
12	B-WHC -> work exhaustion	Low WHE(1) vs. High WHE(2)	0.230	0.312	0.082	0.222 <sup>NS</sup>
		Medium WHE(1) vs. High WHE(2)	0.230	0.355	0.125	0.134 <sup>NS</sup>

(continued on next page)

Table 7 (continued)

#	Relationship	Comparison	$\beta_1$	$\beta_2$	$\beta\Delta 1-2$	$p$ (PLS-MGA)
9	B-WHC -> work exhaustion	Low WHE(1) vs. Medium WHE(2)	-0.004	0.314	-0.319	<b>0.000***</b>
		Low WHE(1) vs. High WHE (2)	0.100	-0.004	-0.104	0.119 <sup>NS</sup>
		Medium WHE (1) vs. High WHE(2)	0.100	0.314	0.214	0.009***

Note: WHE = work-home embeddedness; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.

NS  $p > 0.05$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

embeddedness that enable us to analyze the effect of work and private home characteristics on the relationship between IT-WHBR, WHC, and job outcomes. This allows us to study the entrenched in their work and private home lives.

We take a negative perspective on work-home embeddedness [42] and suggest that high embeddedness also includes high demands [20] and motivation to acquire, invest in, and protect resources within this role [26], which accelerates the effects of WHC. This implies that high embeddedness can accelerate and reduce the effects of WHC. High embeddedness can reduce the effect of WHC on turnover because employees are highly involved in their jobs, and the cost of leaving the organization is too high [16,41]. As shown in our results, high embeddedness reflects higher demands within roles, accelerating the influence of antecedents on WHC. This differential moderating effect of WHE needs to be considered by future research in the context of WHC.

In sum, we provide data-driven results and validate theory-driven hypotheses concerning WHE. We provide evidence that work-home embeddedness influences the effect of antecedents and consequences of WHC. The significant role of work-home embeddedness underlines the importance that each employee's entrenchment in work and home holds in the WHC context. The circumstances in which some employees have children or are more involved in private home obligations than others change the influence of IT-WHBR on WHC and between WHC and negative job outcomes.

The literature on WHC (see Table 2) concentrates mostly on WHC. We complement those findings by offering a holistic perspective considering T-WHC, S-WHC, and B-WHC. This allows us to contribute by investigating the conflict and its consequences more precisely. For example, regarding job outcomes, the past literature does not consider the multiplicity of WHC (e.g., time, strain, behavior; [7,29]) so that we extend research by revealing the different effects of the T-WHC, S-WHC, and B-WHC on job outcomes. The results show different effects of T-WHC, S-WHC, and B-WHC on work exhaustion and organizational commitment. All WHCs increase work exhaustion, and S-WHC unexpectedly increases organizational commitment. One explanation may be that the high job demands are perceived as recognition, which increases identification with the organization. Our results help to create countermeasures that focus on a specific source in terms of T-WHC, S-WHC, and B-WHC.

### 6.2. Practical Implications

We inform organizations that WHC is a crucial cause of turnover resulting in loss of knowledge [11]. By pointing to that challenge, this has important implications for daily organizational processes, as there is a significant need to implement policies and strategies. We provide some of them in the following.

Organizations need to recognize that employees are differently embedded in their private and work life. This calls for tailored policies.

Table 8

Summary of results for hypotheses

Hypothesis	Supported?
H1a: The higher the IT-WHBR, the higher the T-WHC.	H1a Supported
H1b: The effect of IT-WHBR on T-WHC is lower for the Low WHE group than for (b1) Medium WHE and (b2) High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H1b <sub>1</sub> Not supported H1b <sub>2</sub> Supported H1b <sub>3</sub> Supported
H2a: The higher the IT-WHBR, the higher the S-WHC.	H2a Supported
H2b: The effect of IT-WHBR on S-WHC is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H2b <sub>1</sub> Not supported H2b <sub>2</sub> Not supported H2b <sub>3</sub> Supported
H3a: The higher the IT-WHBR, the higher the B-WHC.	H3a Supported
H3b: The effect of IT-WHBR on B-WHC is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H3b <sub>1</sub> Not supported H3b <sub>2</sub> Not supported H3b <sub>3</sub> Supported
H4a: The higher the T-WHC, the lower organizational commitment.	H4a Not supported
H4b: The effect of T-WHC on organizational commitment is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H4b <sub>1</sub> Not supported H4b <sub>2</sub> Supported H4b <sub>3</sub> Not supported
H5a: The higher the S-WHC, the lower organizational commitment.	H5a Not supported
H5b: The effect of S-WHC on organizational commitment is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H5b <sub>1</sub> Not supported H5b <sub>2</sub> Not supported H5b <sub>3</sub> Not supported
H6a: The higher the B-WHC, the lower organizational commitment.	H6a Not supported
H6b: The effect of B-WHC on organizational commitment is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H6b <sub>1</sub> Not supported H6b <sub>2</sub> Not supported H6b <sub>3</sub> Not supported
H7a: The higher the T-WHC, the higher the work exhaustion.	H7a Supported
H7b: The effect of T-WHC on work exhaustion is lower for the Low WHE group than for (b1) the Medium WHE and (b2) the High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H7b <sub>1</sub> Not supported H7b <sub>2</sub> Not supported H7b <sub>3</sub> Supported
H8a: The higher the S-WHC, the higher the work exhaustion.	H8a Supported
H8b: The effect of S-WHC on work exhaustion is lower for the Low WHE group than for (b1) Medium WHE and (b2) High WHE groups and lower for Medium WHE group than for (b3) the High WHE group.	H8b <sub>1</sub> Not supported H8b <sub>2</sub> Not supported H8b <sub>3</sub> Not supported
H9a: The higher the B-WHC, the higher the work exhaustion.	H9a Supported
H9b: The effect of B-WHC on work exhaustion is lower for the Low WHE group than for (b1) the Medium WHE and (b2) High WHE groups, and it is lower for the Medium WHE group than for (b3) the High WHE group.	H9b <sub>1</sub> Supported H9b <sub>2</sub> Not supported H9b <sub>3</sub> Not supported
H10: The higher the work exhaustion, the lower the organizational commitment.	H10 Supported
H11: The higher the organizational commitment, the lower turnover intention.	H11 Supported
H12: The higher the work exhaustion, the higher the turnover intention.	H12 Supported

Note: WHE = work-home embeddedness; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.

For example, employees with children may require different support structures compared to those living alone. Special attention should be given to employees highly embedded in both work and home roles, potentially offering flexible work arrangements or targeted support to address their specific challenges. In this regard, when implementing telework or other flexible work arrangements, organizations should consider employees' work-home embeddedness. Highly embedded employees may benefit from different work agreements compared to those less embedded, acknowledging their unique needs and challenges.

Also, organizations should focus on strategies that manage the IT-induced work-home boundary reduction to decrease the influences on employees' perception of WHC. Recognizing the accelerating effect of IT skills on the relationship between IT-WHBR and WHC, organizations can invest in training programs. Such trainings might help to enhance employees' skills in managing the work-home boundary effectively. Like that, strict guidelines, e.g., when to use the smartphone for work purposes or when and how to work from home needs to be mentioned explicitly. Such guidelines will help employees to fight WHC.

Recognizing the multiplicity of WHC is essential for organizations. It is important not to oversimplify this concept. Differentiating between time, strain, and behavioral aspects allows for a more nuanced understanding of the sources and consequences of WHC. Therefore, organizations should develop interventions that address the unique challenges posed by each dimension, as they have different effects on job outcomes. Possible interventions include work-life integration programs to healthy balance between work and personal life or employee assistance programs to foster mental health support, and support or feedback.

## 7. Limitations and Future Research

The present study does not consider the technology characteristics that might influence T-WHBR [4]. For example, some employees are given cellphones or use their private devices for work. These circumstances might affect IT-induced work-home boundary reduction, so they should be considered in future research. Future research might also concentrate on boundary management strategies that mitigate IT-WHBR and its consequences. Other work-home boundary moderators have been identified [14,35], which could be investigated next to IT-WHBR. IT-WHBR has been developed theoretically. For a more precise analysis of IT-WHBR, future research might create a unique measurement instrument.

The present article concentrates on the conflicts created when work affects private life. Future research should also consider the conflict created when private life affects work performance [2,96]. Besides the organizational consequences examined in the present article, WHC might have negative consequences for the private home role [3], which

## Appendix

### Propensity Score

We estimated the following regression model:

$$\text{Reg}(\text{WHC}_i) = \alpha + \beta_1 * (\text{Members in household}) + \beta_2 * (\text{Living situation}_i) + \beta_3 * (\text{Children under 6}_i) + \beta_4 * (\text{Children over 6}_i) + \beta_5 * (\text{Age}_i) + \beta_6 * (\text{Gender}_i) + \beta_7 * (\text{Family hours}_i) + \beta_8 * (\text{Family time commitment}_i) + \beta_9 * (\text{Family involvement}_i) + \beta_{10} * (\text{Job involvement}_i) + \beta_{11} * (\text{Work hours}_i) + \beta_{12} * (\text{Employment status}_i) + \varepsilon$$

WHC represents the overall perception of the work-home conflict, measured using the scale of Ahuja et al. [7]. We controlled for all work-life situations that might influence the perception of WHC. Regarding the work-life situations, all continuance variables—members in the household, number of children under 6 years old, number of children over 6 years old, age, family hours, family time commitment, family involvement, job involvement, and work hours—are z-standardized. The other variables—gender, living situation, and employment status—are bivariate.

should be considered in future research. Concerning the dimensions of WHC, we rely on Carlson et al. [2] for T-WHC, S-WHC, and B-WHC. We have not considered in this study whether individuals compartmentalize their work and private home roles, so they perform one role after another, whether the roles overlap, so they are partly performed simultaneously, or whether the roles are encompassing, so they are performed completely simultaneously [40]. Future research might consider these different aspects of performance to understand further behavioral consequences of WHC.

Regarding work-home embeddedness, we identified several relevant characteristics based on the household life cycle [43]. However, as living and work have numerous attributes, future research might expand the number of conditions. For example, the studies might consider those who are caregivers for people other than their children, the presence of troubled or disabled children, situations where children are present only on weekends, or whether parents or relatives require care. The balance of work-home embeddedness is likely to have become even more critical since the increase in telework, which might be investigated by future research. Finally, we use the total work-home embeddedness of employees to confirm that embeddedness in work and home moderates the relationships between IT-WHBR, WHC, and job outcomes. We want to motivate future research to zoom in on total work-home embeddedness by distinguishing work and home embeddedness and investigating if unique effects exist. While this goes beyond the scope of this article, it will provide important insights into how separate characteristics of work or home influence job outcomes.

## 8. Conclusion

Interference between work and home roles leads to work-home conflict (WHC). We offer detailed explanations of how IT use blurs the boundaries between work and home roles and how embeddedness in work and home roles influences the effect of WHC on negative job outcomes. We focus on IT-induced work-home boundary reduction and show its effect on WHC and job outcomes. We show significant effects between IT-WHBE on WHC and that WHE determines the effect between IT-WHBR and WHC and influences how employees respond to WHC.

### CRedit authorship contribution statement

**Christoph Weinert:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Validation, Visualization, Writing – original draft. **Christian Maier:** Conceptualization, Supervision, Writing – review & editing. **Sven Laumer:** Supervision, Writing – review & editing. **Tim Weitzel:** Supervision, Writing – review & editing.

Sample

Table A1

Industry and working field

Industry of the current employer (%)		Working field of participants (%)	
Construction industry	2.3	Architecture	0.8
Mining and quarrying	0.6	Training or continuing education of third parties	5.6
Electrical engineering, information technology (IT), data processing	20.3	Consulting	3.2
Energy and water supply	0.8	Design	4.2
Food industry and tobacco processing, gastronomy	1.4	Purchasing/materials management	1.7
Education and training	12.1	Finance/accounting/controlling	13.1
Vehicle construction	0.6	Research and development (R&D)	1.9
Financial Services	16.7	IT/EDP	19.5
Research and development (R&D)	4.3	Journalism/editorial activities	0.2
Health, veterinary and social work	5.8	Marketing	4.9
Land and housing	0.2	Medical professions	4.3
Trade	3.2	Scientific professions	1.6
Handicraft	0.5	Organization/Administration	4.3
Mechanical Engineering	2.9	Human Resources	6.0
Public administration, social security	2.3	Legal system	1.2
Publishing or printing	1.3	Technical professions/engineering	13.8
Transport of passengers and goods, mail	1.3	Transportation	1.0
Other manufacturing industry	2.7	Distribution/Sales	3.8
Telecommunication services, communication	9.3	Others	8.8
Textiles and clothing, leather	0.7		
Economic services (consulting)	1.7		
Others	9.0		

Common Method Bias

Subjective measures are used to capture employees' responses to a given situation. A potential issue with subjective measures is common method bias (CMB; [97]). To evaluate the extent of CMB, we utilize Harman's single factor test [98]. The results of that test show that one factor for each group explains less than 50% of the variance. Since this is not a majority, we conclude that CMB is not a concern. Furthermore, we follow the procedure suggested by Williams et al. [99], during which an additional factor is entered into the PLS model, which contains each indicator of the original model. The remaining factors are transformed into single-item constructs, and the ratio of  $R^2$  with the CMB factor to  $R^2$  without the CMB factor is determined. The CMB factor explains an average  $R^2$  of 0.001, so that a ratio of 1:1,012,161 is received. In addition, most factor loadings are not significant. By comparing this ratio with the ratio used by prior researchers [100], we can state that no influence of CMB is observed, despite several flaws in this method [101]. Also, we test for multicollinearity. As indicated by the variance inflation factors (VIFs), each VIF value is lower than the recommended maximum, which is 5 [102]. We also used the VIF approach [103] to detect CMB. As all values are below the threshold of 3.3, the data can be considered free of CMB. We also checked the correlation matrix for extremely high correlations ( $r > 0.90$ ) because such high correlations are an indicator of CMB [104]. Our correlation matrix indicates no such high correlations. Moreover, we conducted a latent variable marker approach [105]. We adopted the marker variable fashion consciousness from Venkatesh et al. [3]. The results of the construct level correction (CLC) approach with and without the marker variables shows no significant issues with CMB [105].

Measurement Invariance

To assess measurement invariance, we draw on the measurement invariance of composite models (MICOM) procedure by Henseler et al. [106]. MICOM involves configural invariance (i.e., equal parameterization and way of estimation) and compositional invariance (i.e., equal indicator weights). If configural and compositional invariances are established, partial measurement invariance is confirmed, and this allows us to compare the relationships across various groups. Configural invariance is established, as PLS uses identical indicators, data treatments, and algorithms across groups. In addition, the sample size in each group is larger than 75 participants, which is recommended for a statistical power of 80% and a significance of 0.05 [107,108]. Compositional invariance is also established, as the original correlation is greater than the 5% quantile, shown in Table A2.

Table A2

MICOM results

Composite	Low WHE vs. Medium WHE			Low WHE vs. High WHE			Medium WHE vs. High WHE		
	c value (=1)	95% CI	CoIn?	c value (=1)	95% CI	CoIn?	c value (=1)	95% CI	CoIn?
IT-WHBR	1.000	[0.999;1.000]	YES	1.000	[1.000;1.000]	YES	1.000	[0.999;1.000]	YES
S-WHC	1.000	[0.999;1.000]	YES	0.999	[0.999;1.000]	YES	1.000	[0.998;1.000]	YES
T-WHC	0.999	[1.000;1.000]	YES	1.000	[0.999;1.000]	YES	0.999	[0.998;1.000]	YES
B-WHC	1.000	[0.998;1.000]	YES	1.000	[0.999;1.000]	YES	0.999	[0.999;1.000]	YES
Organizational commitment	1.000	[1.000;1.000]	YES	1.000	[1.000;1.000]	YES	1.000	[1.000;1.000]	YES
Work exhaustion	1.000	[1.000;1.000]	YES	1.000	[1.000;1.000]	YES	1.000	[1.000;1.000]	YES
Turnover intention	1.000	[0.998;1.000]	YES	1.000	[0.999;1.000]	YES	0.999	[0.999;1.000]	YES

Note: WHE = work-home embeddedness; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC; CI = confidence interval; CoIn = compositional invariance.

Measurement

Table A3

Cross-correlations

#	Constructs	1	2	3	4	5	6	7	8	9	10	11
1	IT-WHBR	1.000										
2	T-WHC	0.577	0.873									
3	S-WHC	0.537	0.635	0.900								
4	B-WHC	0.484	0.575	0.580	0.858							
5	Organizational commitment	0.076	-0.009	0.073	0.029	0.839						
6	Work exhaustion	0.483	0.571	0.584	0.521	-0.116	0.919					
7	Turnover intention	0.350	0.419	0.373	0.377	-0.361	0.521	0.825				
8	Members live in your household	0.083	0.124	0.103	0.127	0.012	0.035	0.075	NA			
9	Living situation	0.033	0.035	0.024	-0.003	0.041	-0.061	-0.047	0.123	NA		
10	Children under 6 years living at home	0.322	0.343	0.283	0.306	0.065	0.238	0.225	0.201	0.120	NA	
11	Children over 6 years living at home	0.001	0.011	0.044	-0.010	0.175	0.033	-0.048	0.222	0.020	-0.133	NA
12	Age	-0.127	-0.120	-0.123	-0.091	0.054	-0.116	-0.158	0.036	-0.066	-0.118	0.239
13	Gender	-0.209	-0.170	-0.119	-0.186	-0.047	-0.126	-0.150	-0.088	-0.029	-0.242	0.063
14	Family hours	0.059	0.038	-0.014	0.020	0.054	0.027	0.057	0.043	0.081	0.005	-0.017
15	Family time commitment	0.233	0.263	0.220	0.214	0.089	0.182	0.148	0.145	0.157	0.476	0.078
16	Family involvement	-0.005	0.081	-0.003	-0.033	0.225	-0.091	-0.121	0.130	0.158	0.014	0.155
17	Job involvement	0.142	0.122	0.083	0.054	0.499	-0.076	-0.143	0.049	0.087	-0.037	0.123
18	Work hours per Week	0.055	0.081	0.005	-0.017	0.054	0.027	-0.046	-0.082	0.169	-0.051	-0.037
19	Employment status	0.058	0.077	0.092	0.053	0.037	0.063	0.003	0.019	0.027	-0.015	0.043
20	Personal innovativeness in IT	0.257	0.301	0.200	0.219	0.307	0.143	0.091	0.061	0.061	0.184	0.060
21	Computer self-efficacy	0.110	0.094	0.047	0.055	0.187	0.115	0.025	-0.066	0.017	0.029	0.110
22	IT experience	0.216	0.123	0.182	0.199	-0.095	0.224	0.290	0.062	-0.026	0.205	-0.008
#	Constructs	12	13	14	15	16	17	18	19	20	21	22
12	Age	NA										
13	Gender	-0.054	NA									
14	Family hours	-0.056	0.113	NA								
15	Family time commitment	-0.081	-0.024	0.167	NA							
16	Family involvement	0.075	0.060	0.138	0.111	NA						
17	Job involvement	0.029	-0.034	0.103	0.015	0.319	NA					
18	Work hours per Week	0.110	-0.132	0.325	-0.004	0.147	0.113	NA				
19	Employment status	0.045	-0.060	-0.095	-0.009	0.027	-0.030	0.173	NA			
20	Personal innovativeness in IT	-0.025	-0.163	0.077	0.122	0.287	0.293	0.157	0.101	0.861		
21	Computer self-efficacy	0.014	-0.014	-0.013	0.063	0.194	0.115	0.034	0.050	0.293	0.807	
22	IT experience	-0.204	-0.120	-0.040	0.121	-0.315	-0.115	-0.220	-0.012	-0.122	-0.130	0.885

Note: NA = not applicable; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.

Table A4

Overview of constructs

Construct	Items	Loading
Time-based WHC [2] Cronbach's $\alpha = 0.844$	My work keeps me from my family activities more than I would like.	0.881
	On the job I have so much work to do that it takes away from my personal interests.	0.866
	My work takes up time that I'd like to spend with family/friends.	0.872
Stain-based WHC [2] Cronbach's $\alpha = 0.766$	It is difficult for me to relax when I am away from my work.	0.889
	I am often preoccupied with work while I am at home.	0.910
Behavior-based WHC [2] Cronbach's $\alpha = 0.740$	When I get home from work, I am often too physically tired to participate in family activities/responsibilities. (dropped)	-
	I am not able to act the same way at home as I do at work.	0.883
	The problem-solving approaches I use in my job are not effective in resolving problems at home.	0.899
IT-WHBR (adopted from [4])	What works for me at home does not seem to be effective at work as well. (dropped)	-
	Using ICTs blurs the boundaries between my job and my home life.	NA
Overall WHC [7] Cronbach's $\alpha = 0.941$	The demands of my work interfere with my home and family life.	0.893
	The amount of time my job takes up makes it difficult to fulfill family responsibilities.	0.915
	Things I want to do at home do not get done because of the demands my job puts on me.	0.906
	My job produces strain that makes it difficult to fulfill family duties.	0.913
	Due to work-related duties, I have to make changes to my plans for family activities.	0.874
Organizational commitment [7] Cronbach's $\alpha = 0.895$	I am willing to put in effort beyond the norm for the success of the organization.	0.722
	For me, this is the best of all possible organizations for which to work.	0.873
	I am extremely glad to have chosen this organization to work for over other organizations.	0.860
	This organization inspires the very best in the way of job performance.	0.887
Work exhaustion [7] Cronbach's $\alpha = 0.861$	I show by my actions that I really care about the fate of this organization.	0.844
	I feel emotionally drained from my work.	0.922
	I feel used up at the end of the work day.	0.925
	I feel fatigued when I get up in the morning and have to face another day on the job. (dropped)	-
Turnover intention [7] Cronbach's $\alpha = 0.840$	I feel burned out from my work.	0.909
	How likely is it that you will be working at the same company this time next year?*	0.715
	How likely is it that you will take steps during the next year to secure a job at a different company?*	0.915
	I will be with this company five years from now.* (dropped)	-

(continued on next page)



Table A4 (continued)

Construct	Items	Loading
Job involvement [3] Cronbach's $\alpha = 0.902$	I will probably look for a job at a different company in the next year.	0.940
	I am very much personally involved in my job. (dropped)	-
	Most of my interests center around my job.	0.908
	The most important things that happen to me involve my present job.	0.921
	Most of my personal life goals are job-oriented.	0.897
Family involvement [3] Cronbach's $\alpha = 0.919$	I consider my job to be very central to my existence.	0.893
	I am very much personally involved in my family.	0.843
	Most of my interests center around my family.	0.874
	The most important things that happen to me involve my family.	0.882
	Most of my personal life goals are family-oriented.	0.863
Family time commitment [3]	I consider my family to be very central to my existence.	0.883
	The percentage of child-related tasks that they performed (0-100%).	NA
Family hours [3]	The number of hours spent per week on family- and home-related duties such as housework and child care: _____.	NA
Members live in your household	How many family members live in your household?	NA
Living situation	What is your living situation?	NA
1 = living alone; 2 = living together		
Children under 6 years living at home	How many of your children under 6 years live at home (in the same apartment or house as you)?	NA
Children over 6 years living at home	How many of your children over 6 years live at home (in the same apartment or house as you)?	NA
Age	What is your age?	NA
Gender	What sex are you?	NA
1 = female; 2 = male		
Work hours per week	How many hours per week do you work?	NA
Employment status	What is your current employment status?	NA
1 = unemployed; 2 = full-time, 3 = part-time		
Personal innovativeness in IT [82,109]	If I heard about a new information technology, I would look for ways to experiment with it.	0.826
	Among my peers, I am usually the first to try out new information technologies.	0.917
	In general, I am hesitant to try out new information technologies. (dropped)	-
	I like to experiment with new information technologies.	0.878
Computer self-efficacy [48,110]	I could complete a job using the work IT ...	0.834
	...if there was no one around to tell me what to do as I go.	0.810
	...if I had never used a software like it before.	0.806
	...if I only had the software manuals for reference.	0.797
	...if I had seen someone else using it before trying it myself. (dropped)	-
	...if I could call someone for help if I got stuck. (dropped)	-
	...if someone else had helped me get started. (dropped)	-
	...if I had a lot of time to complete the job for which the software was provided. (dropped)	-
	...if I had just the built-in help facility for assistance. (dropped)	-
	...if someone showed me how to do it first. (dropped)	-
IT experience [48,111]	...if I had used similar software before this one to do the same job. (dropped)	-
	On average, how frequently do you use a computer for communicating with others (e.g., through email, instant messages, Facebook).	0.855
	On average, how frequently do you use Internet browsers such as FireFox, Internet Explorer and Google Chrome?	0.918
1 = daily; 7 = once a year or less	Overall, how frequently do you use a computer?	0.882
Fashion consciousness (marker variable) [3]	A person should try to dress in style.	0.839
	When I must choose between the two, I usually dress for fashion, not for comfort.	0.832
	An important part of my life and activities is dressing smartly.	0.786

Note: If not otherwise specified, then a 7-point Likert scale from strongly disagree (1) to strongly agree (7) was used; \*reversed items; IT-WHBR = IT-induced work-home boundary reduction; WHC = work-home conflict.

Post hoc Analysis

In a post hoc analysis, we validate whether IT-WHBR affects job outcomes indirectly. We used a bootstrapping method [112], which suggests calculating each independent variable's 95%-bias-corrected confidence intervals (5,000 bootstrap resamples). If zero does not lie within the bias-corrected interval, the independent variable has an indirect effect through the mediator on the dependent variable. The results show that the effect of IT-WHBR on work exhaustion is mediated by T-WHC, S-WHC, and B-WHC. Only S-WHC acts as a mediator for the relationship between IT-WHBR on organizational commitment. Regarding turnover intention, the results show that T-WHC, S-WHC, B-WHC, and work exhaustion mediate the effect of IT-WHBR on turnover intention. S-WHC and organizational commitment also mediate the indirect effect of IT-WHBR on turnover intention (see Table 6).

Besides work-home embeddedness, employees might have different IT experiences and computer self-efficacy. It might also be necessary to consider the effect of essential IT abilities on the employees. Past literature shows that personal innovativeness in IT (PIIT), computer self-efficacy, and IT experience play a significant role in understanding adverse job outcomes [48,82]. PIIT is the willingness to try new IT [109]. Computer self-efficacy is the degree to which people believe they can successfully use a computer to do their job [110]. IT experience is the degree to which a person has used computers in their lifetime [48,111]. We controlled whether these IT abilities affect the impact of IT-WHBR on other WHC. The results, shown in Table A5, demonstrate that the effect of IT-WHBR on T-WHC is moderated by IT experience so that employees with high IT experience perceiving high IT-WHBR have a higher T-WHC than employees low in IT experience. Similar results can be seen for the moderation of PIIT. Employees high in PIIT perceiving high IT-WHBR have a high T-WHC than employees low in PIIT. In addition, employees high in computer self-efficacy perceive high IT-WHBR and have a higher T-WHC than employees low in PIIT. The effect of IT-WHBR on S-WHC is moderated by PIIT so that employees high in PIIT perceiving high IT-WHBR have a higher S-WHC than employees low in PIIT. The effect of IT-WHBR on B-WHC is moderated by PIIT so that employees

high in PIIT perceiving high IT-WHBR have a higher S-WHC than employees low in PIIT. Employees with high computer self-efficacy perceiving high IT-WHBR have higher B-WHC than those with low computer self-efficacy. Employees with low IT experience perceiving high IT-WHBR have a higher B-WHC than employees low in IT experience.

**Table A5**  
Results of the post hoc analysis

Moderation	Dependent variables		
	T-WHC	S-WHC	B-WHC
IT-WHBR × PIIT	0.139***	0.174***	0.111**
IT-WHBR × computer self-efficacy	0.088**	0.078 <sup>NS</sup>	0.075**
IT-WHBR × IT experience	-0.072*	-0.048 <sup>NS</sup>	-0.062*

Note: PIIT = personal innovativeness in IT; IT-WHBR = IT-induced work-home boundary reduction; T-WHC = time-based WHC; S-WHC = strain-based WHC; B-WHC = behavior-based WHC.

NS  $p > 0.05$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

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