



Boundary Management in Digitalization: The Impact on Work and Leadership Behaviors and the Consequences for Organizations, Individuals and Supervisors

PhD thesis submitted to the faculty of Science

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February 2026

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**“Boundary Management in Digitalization: The Impact
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Abstract

The digitalization opens up more options for workers to engage in flexible work designs (FWD) through timely and locally independent information and communication technologies (ICT). While these options offer advantages for the individual they are tied to increased risks for individuals and demands for supervisors at the same time. Therefore, in our first study, we developed a theoretical model, that converges ICT use with boundary management to identify beneficial forms of digital work. In our second study, we designed, produced and rolled-out an E-Learning for supervisors and evaluated the effects on the participating supervisors and their team members. And lastly, we investigated the effects of the congruence of the remote work intensity between supervisors and their employees. We identified responsiveness in combination with integration enactment as potentially disadvantageous forms of digital work. We also found that boundary management tactics and social norms can be significantly changed through the E-Learning intervention. And finally, we found that the supervisors' remote work behaviors are linked to their employee's remote work experience regarding performance while personal remote work intensity was linked with work-family conflict. In sum, we identified aspects on organizational level, individual work behaviors and leadership processes that may support beneficial FWD. We provided recommendations for organizations for remote work approaches and guidelines, for leadership behaviors like role modelling and support and for individuals regarding cautious remote work decisions and boundary management tactics. With this, we add to the understanding of the systemic relationships in FWD and provide starting points for a holistic and beneficial approach to designing flexible work situations.

Keywords: Flexible work arrangements, boundary management, leadership behaviors, integration, E-Learning, WF conflict, performance

Résumé

La numérisation offre aux travailleurs davantage de possibilités de s'engager dans des formes flexibles d'organisation du travail (FWD) grâce à des technologies de l'information et de la communication (TIC) accessibles en tout lieu et en temps voulu. Bien que ces possibilités présentent des avantages pour l'individu, elles s'accompagnent simultanément de risques accrus pour les personnes ainsi que d'exigences supplémentaires pour les superviseurs. Ainsi, dans notre première étude, nous avons élaboré un modèle théorique qui articule l'utilisation des TIC et la gestion des frontières afin d'identifier des formes de travail numérique bénéfiques. Dans notre deuxième étude, nous avons conçu, produit et déployé un module d'e-learning destiné aux superviseurs et évalué ses effets sur les superviseurs participants ainsi que sur les membres de leurs équipes. Enfin, nous avons examiné les effets de la congruence de l'intensité du télétravail entre superviseurs et employés. Nous avons identifié que la réactivité, combinée à des stratégies d'intégration, peut constituer une forme potentiellement défavorable de travail numérique. Nous avons également constaté que les tactiques de gestion des frontières et les normes sociales peuvent être significativement modifiées par l'intervention d'e-learning. Enfin, nous avons observé que les comportements de télétravail des superviseurs sont liés à l'expérience de télétravail de leurs employés en termes de performance, tandis que l'intensité personnelle du télétravail est associée au conflit travail-famille. En somme, nous avons identifié des aspects au niveau organisationnel, dans les comportements individuels au travail et dans les processus de leadership qui peuvent favoriser des formes bénéfiques de FWD. Nous formulons des recommandations pour les organisations concernant les approches et lignes directrices en matière de télétravail, pour les comportements de leadership tels que le rôle de modèle et le soutien, ainsi que pour les individus en ce qui concerne des décisions prudentes relatives au télétravail et des tactiques de gestion des frontières. Par ces apports, nous contribuons à une meilleure compréhension des relations systémiques dans les FWD et fournissons des points de départ pour une approche holistique et bénéfique de la conception de situations de travail flexibles.

Mots-clé: travail flexible, gestion des frontières, leadership, intégration, E-Learning, conflit travail-famille, performance

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1 Introduction

Ten years ago, Klaus Schwab, founder and executive chairman of the World Economic Forum (WEF) stated:

«We must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural, and human environments. There has never been a time of greater promise, or greater peril.»

(World Economic Forum, 2016)

This illustrates the comprehensive and yet ambivalent prospects of the digitalization, that experts established a decade ago. The digitalization brought and still brings to this day a magnitude of rapid changes, that often come with upsides and downsides simultaneously (Day et al., 2019; Gajendran et al., 2024; Lee, 2023). Furthermore, it shows that the effects of the digitalization not only comprise technical changes in the work domain but also extend into other facets of our daily lives (Beckel et al., 2023; Demerouti et al., 2014). Consequently, a holistic perspective on the oftentimes interactive effects of the digitalization is necessary in order to understand what is beneficial for us (Gajendran et al., 2015; Golden et al., 2006).

In today's work environment the transformation driven by the digitalization has not only altered the processes and systems that we sought to optimize initially, but also the people, the leaders and organizations behind them (Derks et al., 2015; Kingma, 2018; Park & Cho, 2022). While many advancements like remote access to work, simplified information sharing and faster decision making are undoubtably big advantages, they come with risks like reduced detachment from work, blurred boundaries between work and private life and potentially extended availability for work (Allen et al. 2015; Beckel et al., 2023; Day et al. 2019; Dettmers et al., 2016a).

Being able to stay connected to work outside working hours through a private mobile device makes quickly checking on work matters or replying to emails very fast and easy. But at the same time, it makes interrupting private time and disturbing recovery processes just as swift, often creating a paradox concerning the efficacy (Day et al. 2019; Derks et al., 2015). Moreover, remote working conditions allow for more flexibility to integrate demands from different life domains, while potentially being subjected to more role blurring (Allen et al., 2021; Derks et al., 2015). And finally, having more options in designing our flexible work arrangements might lead to more diversity within groups and in consequence higher effort in managing them (Lautsch et al., 2009; Park & Cho, 2022; Parker et al., 2020).

In a world in which digitalization is no longer optional– if it ever was– and our work and private lives become increasingly interwoven through a string of information and communication technologies (ICT), it is crucial to understand how to seize the advantages of flexible work designs (FWD) and mitigate the potential risks they bring.

2 How the Digitalization Transforms Our Work

2.1 Challenges on organizational level

Most apparently, the digitalization has introduced advanced ICT applications to organizations. Emails, video calls and instant messaging provide fast, cheap and easy communication across not only individuals, teams and organizations but also across regions and time zones. Only 30 years ago, a business meeting with a team in a different region or country was only possible through expensive and bad quality landline calls and sharing data was done through slow mailings of stacks of paper. Today, perfectly arranged video calls with even hundreds of people with clear sound and image are state of the art and huge amounts of data can be shared across the world in seconds at no cost. This has massively broadened and accelerated our communication processes and has led to exponentially increased amounts of shared data that have to be managed (Statista, 2025).

Besides applications there have been huge advancements in work infrastructure. Data is no longer stored on storage devices like disks or local hard drives, but more commonly in server-based cloud solutions which allow for remote access over the internet. These developments are the basis for working remotely since now, presence in the office is for many work processes no longer required. And finally, due to the Covid-19 pandemic, most organizations had to implement the required infrastructure which has led to an increased but stable share of 37% of at least occasionally remotely working employees among the entire workforce in Switzerland (Bundesamt für Statistik, 2025).

This increased flexibility has also changed the work environment. Organizations realize a decline in required office space and a shift to virtual business and communication processes since workers are no longer by default available at the same time and location (Allen et al., 2015; Demerouti et al., 2014; Kingma, 2018; Lee, 2023). The reduced informal interactions inhibit social coherence and fosters more static and siloed collaboration (CIPD, 2020; Yang et al., 2022). Moreover, workers tend to identify less with the organization and more with their immediate teams in remote work settings (Shi et al., 2024; Yang et al., 2022). This makes it more difficult for organizations to build and develop shared values and a joint culture. Moreover, particularly more senior, independently working employees might choose to work remotely which poses a challenge for stability and knowledge sharing.

These developments require organizations to establish guidelines in order to ensure a common and effective approach to working remotely (Allen et al., 2015; Beckel & Fisher, 2022; Derks &

Bakker, 2010). However, many organizations are still having problems with setting up remote work policies, since they do not feel capable enough managing remote workers and fear loss of control (Parker et al., 2020). Furthermore, successful remote work is dependent on the individual work role as well as personal preferences and attributes, making it even harder to implement fair and effective approaches across wider parts of the workforce (Allen et al., 2024; Barber et al., 2023; Kingma, 2018; Wessels et al., 2019).

Having a substantial remote workforce that makes use of their spatial and timely flexibility might lead to a work environment where it is perceived as if work never stops. Where some decades ago, 9pm or Sunday morning was undoubtably outside working hours, today, it might just be someone's preferred remote working time and is no longer perceived extraordinary. This might establish social norms where a constant connection to work even outside personal working hours seems normal (Schiemann & Glavin, 2017). This norm might make it more difficult to wrap up the workday and detach from work which can lead to an *always-on culture* or increased *telepressure*, which are linked to negative consequences (Barber & Santuzzi, 2015; Derks et al. 2015; McDowall & Kinman, 2017). Furthermore, these norms might lead to technology assisted supplemental work (TASW) or extended availability which are also linked to risks for health and well-being (Derks & Bakker, 2014; Dettmers, 2017; Fenner & Renn, 2010; Kühner et al., 2023; O'Driscoll et al., 2010). Therefore, organizations need to be mindful not to foster a work environment that negatively affects their employees' wellbeing.

In summary, some of the challenges on organizational level due to the digitalization include more complex virtual collaboration, difficulties in establishing shared understandings and a potentially unhealthy work culture.

2.2 Challenges for the individual

Having the opportunity to work remotely is perceived as an employment benefit (Allen et al., 2024; Park & Cho, 2022; Parker et al., 2020). Employees obtain more options to design and schedule their workday in a timely and locally flexible manner according to their personal needs. Working remotely is usually associated with advantages like saving in time spent on commute or travel expenses, reduced interruptions through co-workers and increased flexibility to integrate demands from work and private life (Gajendran & Harrison, 2007; Park & Cho, 2022; Wessels et al., 2019). Usually, the autonomy increases in remote work situations as well, which might positively influence motivation and therefore performance (Gajendran et al., 2015; Gajendran & Harrison, 2007).

On the other hand, working remotely is associated with reduced opportunities to connect and exchange with co-workers and supervisors (Allen et al., 2024; Gajendran & Harrison, 2007; Klebe et al., 2023). This might potentially lead to isolation and reduced quality relationships with stakeholders (Elst et al., 2017; Gajendran & Harrison, 2007; Gajendran et al., 2024). Being away from the office also makes learning from others or receiving social support more difficult (Collins et al., 2016; Mühlenbrock et al., 2023). Particularly in times of distress, in a new role or responsibility or depending on personal aspirations this might be counterproductive.

Therefore, employees need to carefully consider several aspects to decide on their remote work set-up. Personal abilities like self-management and being able to work independently are important conditions for successful remote work (Allen et al., 2024; Wang et al., 2021). There are also indications that matching the personal remote work behavior with one's supervisor's remote work behavior might be favorable (Golden & Fromen, 2011; Park & Cho, 2022; Parker et al., 2020). Additionally, there seem to be different beneficial effects regarding the extent of remote work. For some aspects like satisfaction, commitment and relationship quality with co-workers, a medium remote work intensity seems to be recommended (Allen et al., 2015). Other studies found that performance, satisfaction and well-being decrease as a result of growing isolation associated with extended remote work (Gajendran et al., 2024; Golden et al., 2006). Work-family (WF) conflict seems to steadily decline with progressive remote work intensity (Gajendran & Harrison, 2007).

Working remotely usually comes with a distinct degree of permeability of boundaries between work and private life, like being able to receive a work call at home (Allen et al., 2014; Ashforth et al., 2000). This facilitates for demands from work to intrude into the private life domain more easily which might lead to negative consequences like WF conflict (Derks et al., 2015; Gajendran & Harrison, 2007). Permeable boundaries are also linked to *integration enactment*, when a role change into the work role happens in an unplanned and uncontrolled manner like through a work call on the private device outside of scheduled working hours (Allen et al., 2014; Cobb et al., 2022). This can lead to extended availability for work or TASW which are linked to negative consequences for well-being and health (Derks et al., 2015; Dettmers, 2017; Kühner et al., 2023). Setting and managing personal boundaries are therefore important competences to successfully integrate FWD.

With the digitalization, the amount and complexity of ICT applications increase, which can pose more ICT demands upon employees (Hu et al., 2021; Day et al., 2012). Although ICTs are predominantly perceived as a resource, perceived ICT demands are linked to much stronger negative consequences like exhaustion and strain (Day et al., 2012; Klebe et al., 2023; Ninaus et

al., 2021). Most employees use at least two or more instant messaging or collaborative work applications like MS teams, Zoom, Webex, Slack or Skype besides phone and email (Mio, 2019). These developments drive *responsiveness*: predominantly receiving and reacting upon messages or inquiries from work as opposed to initiating tasks and sending out messages. Responsiveness is linked to reduced control and autonomy in planning and implementing the workday and is associated with negative consequences for wellbeing, health and performance (Brummelhuis et al., 2012; Day et al., 2012; O’Driscoll et al., 2010; Wilkes et al. 2018). Moreover, recipients perceive usually more interruptions and experience higher expenditure (Derks & Bakker 2010; Ramsey et al., 2008; Rennecker & Godwin, 2005).

In summary, some of the challenges for individuals due to the digitalization include complex personal remote work decisions, managing personal boundaries and additional ICT demands like responsiveness.

2.3 Challenges for leadership behaviors

Managing remotely working employees is an additional demand for supervisors (Ninaus et al., 2021; Park & Cho, 2022). The supervisor is, however, a critical success factor for remote work (Gan et al., 2023; Guo et al., 2024; Lautsch et al., 2009; Straub, 2012). Visibility, control and trust over employees that choose to work away from the office might be impaired if information about the employees’ work behaviors are no longer easily available for the supervisors (Lautsch et al., 2009; Parker et al., 2020). This makes monitoring for supervisors more difficult and can result in micromanagement and unreasonable expectations of constant availability (Park & Cho, 2022; Parker et al., 2020). For example, supervisors might base their evaluation of their employees’ work primarily on their online status rather than their work output because that is the only observable information they have, when employees are not close by or in regular exchange. This might lead to employees feeling observed and controlled and potentially prioritizing their online status above an effective work process (Lautsch et al., 2009; Parker et al., 2020). This emphasizes the need for appropriate remote monitoring and control processes (Golden & Fromen, 2011; Lautsch et al., 2009; Park & Jae, 2022).

Moreover, providing support and learning opportunities to subordinates might be more difficult in remote work settings due to reduced opportunities (Gan et al., 2023; Klebe et al., 2023; Lautsch et al., 2009). While some subordinates might appreciate a remotely working supervisor, there might be others that might benefit more from increased supervisor presence (Dulebohn et al., 2011; Golden & Fromen, 2011). Supervisors might perceive their employees more or less similar to their own behavior and preferences which could influence their relationship quality

(Dulebohn et al., 2011; Julien et al., 2011). This requires supervisors to develop new competencies, like building and maintaining high-quality virtual relationships, shared understandings and specific support for remote working employees (Golden & Fromen, 2011; Lautsch et al., 2009; Park & Jae, 2022).

Supervisors are also important role models in their working behavior towards their employees (Chambel, 2022; Koch & Binnewies, 2015). While they might serve as positive examples of how to organize remote work, they might as well negatively influence employees. If a remotely working supervisor exemplifies permeable boundaries between work and private life, employees might feel pressure to permit boundary violations also (Gajendran et al., 2015; Koch & Binnewies, 2015; Stempel et al., 2022). For example, a supervisor who takes phone calls or sends messages outside regular working hours might set the expectation that extended availability is normal. Therefore, remotely working supervisors might facilitate the risk for employees to engage in unhealthy working behaviors.

In summary, some of the challenges for leadership behaviors due to the digitalization include more adapted control and support behaviors, as well as high demands on positive role modelling.

3 Research Questions

The digitalization impacts our working world in many different ways. While some changes have increased flexibility and opened up new possibilities for individuals and organizations, there are risks and downsides attached that require an adaptation of working conditions, leadership and work behaviors. Therefore, it is necessary to understand what is needed in order to seize the advantages of flexible work designs and mitigate the risks. With our research papers, we aimed to identify approaches to positively adapt our work environment, individual behaviors and leadership practices.

With our first research paper, we aimed to build a bridge between the effects of the digitalization and boundary management as modern ICT use affects many facets that are essential for maintaining healthy boundaries between work and private life. The digitalization accelerates and expands communication processes and leads to more responsiveness with higher costs for recipients (Day et al., 2012; Hu et al., 2021; Derks & Bakker, 2010; Rennecker & Godwin, 2005). At the same time ICT allow for more integration due to more permeable boundaries between work and private life (Allen et al., 2014; Ashforth et al., 2000), which in turn can set unhealthy social norms in a collaborative work environment (Barber et al., 2023; Schieman & Glavin, 2017). Therefore, our first research question was:

1. *How can our work environment be adapted in order to reduce responsiveness and unhealthy social norms and to improve remote work collaborations?*

With our second research paper, we aimed to investigate how healthy boundaries between work and private life can be fostered through an intervention. Boundary management tactics (BMT) have shown to support segmentation between life domains (Althammer et al., 2024; Kreiner et al., 2009; Rich et al., 2020), while the supervisor can foster unhealthy social norms that might negatively impact their employees (Derks et al., 2015; Koch & Binnewies, 2015; Kühner et al., 2023). By addressing both in our intervention we aimed to not only target the work behavior but also the working conditions for employees potentially increasing the effectiveness of the intervention (Bes et al., 2023; Initiative Gesundheit und Arbeit, 2015). Therefore, our second research question was:

2. *How can supervisors be trained to strengthen and support healthy boundaries between work and private life and to attenuate unhealthy social norms at the workplace in order to reduce integration enactment?*

With our third research paper, we aimed to elaborate further on the ambiguous and multifaceted supervisor-employee relationship in remote work designs (Lautsch & Kossek, 2011; Parker et al., 2020). Since the supervisor is a key factor in the employees' work experience, the congruence of remote work patterns might influence their virtual collaboration (Klebe et al., 2023; Lautsch et al., 2009; Park & Cho, 2022). Similarity and shared experiences should support adapted leadership behaviors that influence the employees' performance and WF conflict (Beckel & Fisher, 2022; Gajendran et al., 2015; Gan et al., 2023; Guo et al., 2024). Therefore, our third research question was:

3. *How does remote work congruence between supervisors and their employees influence the employees' performance and WF conflict in remote work designs?*

4 Summary of Research Project and Research Papers

The following research papers were produced within the framework of the research project “Omnipresent work: how to separate job and private life” which was conducted as part of the National Research Programme “NRP77 Digital Transformation” of the Swiss National Science Foundation (2025). The project included three intervention studies and a control group in a longitudinal study design (N=1645) between 2020 and 2025. Since the digitalization can lead to blurred boundaries between work and private life, the aim of the project was to investigate how employees, teams and supervisors can establish and manage healthy and performance-oriented boundaries. Therefore, we designed and developed three interventions: a smartphone app for individuals, an E-Learning for supervisors and a workshop for teams. We recruited more than 100 supervisors with their subordinates across various companies in Switzerland and carried out the interventions embedded in a longitudinal survey with four measurement waves. The following three research papers emerged from this research project.

In the first research paper, we conceptualized the theoretical relationships between boundary management and ICT use, proposed a model that explains the consequences of the different forms of digital work and suggested strategies for more advantageous work (Ott et al., 2021). In the second research paper, we evaluated the effects of the E-Learning intervention on integration enactment, social norms and BMT in both the participating supervisors and their employees (Widler et al., 2025a). In the third research paper, we investigated if a congruence in remote work behaviors between supervisors and their employees had beneficial effects on performance and WF conflict (Widler et al., 2025b).

4.1 Always on- Drawing Boundaries Between Work and Private Life in the Digitalized Working World

The digitalization changes our ICT to faster, more collaborative ways of working (Kingma, 2018). At the same time, the increased flexibility of work designs changes our work culture to more integrated work and private life domains (Demerouti et al., 2014; Derks et al., 2014). While many advantages are linked to flexible work designs, there seem to be also risks for downsides like the “Always-on” mentality or “telepressure” (Allen et al., 2015; Barber & Santuzzi, 2015; McDowall & Kinman, 2017).

In our theoretical model of the forms of digital work, we conceptualized that there are two levels of the dimension ICT use, namely responsive and initiating, that are linked to different outcomes (Rennecker & Godwin, 2005). While initiating ICT use describes more autonomy and control in

managing digital communication processes, responsive ICT use means the opposite, i.e. predominantly receiving messages and work tasks without control or notice that interrupt and externally define the work process. Additionally, according to Ashforth et al. (2000) work and private life usually range on a continuum between segmentation and integration, describing the degree to which work and private life domains overlap. While segmentation means stronger boundaries and less overlap or role changes between work and private life, integration describes the opposite: flexible and permeable boundaries between work and private life domains, more overlap and therefore faster and easier role changes (Allen et al., 2014; Ashforth et al., 2000).

Considering both aspects, the model describes four quadrants of digital work, depending on the degree of integration-segmentation and initiating-responsive ICT use, that are linked to different outcomes (Ott et al., 2021). While segmentation-responsiveness is associated with high-demands but allows for recovery outside the work role, integration-responsiveness is linked with additional risks like blurred boundaries, extended availability and negative consequences for health, well-being and performance (Amstad et al., 2011; Day et al., 2012; Derks & Bakker, 2010; Dettmers et al., 2016a). Integration-initiating digital work allows for more control and autonomy about the work process and is therefore more advantageous although it might lead to extension of work time (Cooper & Lu, 2019; Derks & Bakker, 2010; Dettmers et al., 2016a). Segmentation-initiating digital work is most favorable, since not only is it associated with more control and autonomy, it also allows for detachment from work and undisturbed recovery time (Dettmers et al., 2016a; Fenner & Renn, 2010; Park et al., 2011).

Finally, recommendations for individuals, supervisors and teams are provided in order to develop their digital work behavior towards more segmentation-initiating digital work. Individuals can benefit from more boundary management tactics (Kreiner et al., 2009), while supervisors might watch their role model behavior, communication and autonomy support (Crain & Stevens, 2018; Derks et al., 2015; Franke et al., 2014). Teams can focus on setting joint policies and expectations concerning availability and communication (Day et al., 2019; Derks et al., 2015; Park et al., 2011).

The digitalization and advancements in ICT bring new risks of uncontrolled integration of work and private life domains that might lead to reduced health, well-being and performance. Therefore, it is recommended to avoid responsive ICT use as much as possible and strengthen segmentation behaviors where needed.

4.2 Leading to Boundary Management: An Intervention for Supervisors Targeting Integration Enactment, Social Norms and Boundary Management Tactics

The digitalization facilitates blurring of boundaries between work and private life due to flexible work designs, that allow to work in a temporally and locally independent manner (Allen et al., 2024). If role changes occur unwanted and unplanned, integration enactment takes place, for example through a message from work on the private phone interrupting private time and resulting in a transition into the work role. Integration enactment is associated with a risk of negative consequences for health and well-being (Dettmers et al., 2016b; O'Driscoll et al., 2010; Wepfer et al., 2018). In order to avoid integration enactment, boundary management tactics (BMT) can be of use (Althammer et al., 2024; Kreiner et al., 2009; Rich et al., 2020). In addition to personal competencies to increase segmentation between life domains like BMT, expectations of the supervisor and their role model behavior might have a major influence on integration enactment (Derks et al., 2015; Koch & Binnewies, 2015; Kühner et al., 2023). Therefore, we designed an intervention for supervisors to train up their BMT, reduce their integration enactment and improve the social norms to their employees with a more health-oriented and autonomy supporting leadership style and positive role modelling.

We developed an online-based and self-paced E-Learning for supervisors consisting of four modules including educational parts about the effects of the digital transformation on our boundaries between work and private life, health-oriented leadership and the different options to support employees in managing a healthy work-life balance.

After rolling it out across supervisors (N=53), we evaluated the effects of the intervention on the participating supervisors and their employees (N=148) across four measurement waves ranging from pre-intervention to four weeks, eight weeks and six months post intervention and against a control group (N_{supervisor}=275; N_{team}=517). We found that the E-Learning increased the BMT and changed the perceived social team norm for supervisors significantly, while their integration enactment only decreased at six months post intervention and did not differ from the control group. We did not find significant changes in employees, raising the question of how interventions for supervisors targeting additionally their employees should be designed.

In summary, our intervention improved the supervisors' BMT quickly and permanently to more healthy boundary management and a more positive perception of their team behaviors. Some observable changes indicate a multi-step process which require preceding developments. Applying this logic onto the employee results, we might have seen further improvements of their behaviors in an increased study horizon.

4.3 Working Remotely When the Boss is not: Impact of Supervisor Remote Work Intensity on Remotely Working Employee's Performance and WF Conflict

With flexible work designs becoming standard working conditions, employees and organizations need to renegotiate and realign their demands and boundaries (Allen et al., 2024). While working remotely is considered a sought-after employment benefit, it is associated with higher demands for supervisors (Gan et al., 2023; Lautsch & Kossek, 2011; Lee, 2023; Park & Cho, 2020). In general, remote work has been linked to increased performance and reduced WF conflict for employees (Beckel et al., 2023; Beckel & Fisher, 2022; Gajendran et al., 2015; Gajendran & Harrison, 2007). However, whether employees benefit from remote work opportunities is also influenced by the supervisor as a key factor in the employees' working conditions (Lautsch & Kossek, 2011; Parker et al., 2020).

Besides personal competencies like managing own time or sticking to a schedule, the supervisor plays a crucial role in successful remote work through support and control behaviors like relationship building, specific support and feedback (Allen et al., 2024; Beckel & Fisher, 2022; Gan et al., 2023; Lautsch & Kossek, 2011). In order to apply positive leadership behaviors, it is necessary for the supervisor and the employees to meet and connect at least to some extent, to effectively communicate and to develop shared understandings (Dulebohn et al., 2011; Julien et al., 2011). However, in a remote work context this might be impaired if the work patterns and the remote work intensity (RWI) of the supervisor and the employee differ substantially (Golden & Fromen, 2011; Klebe et al., 2023; Park & Cho, 2020).

Therefore, we hypothesized that employee RWI has a positive effect on their performance and WF conflict and that these relationships are being moderated by the RWI of the supervisors. While we found significant effects of the supervisor's RWI on the employees' performance and significant effects of the employees' RWI on their WF conflict, we did not find a moderation of the RWI of the supervisors on their employees' remote work effects.

Our results add to the complex and often diverse relationships of remote work behaviors and performance and WF conflict. We showed that the supervisor's RWI is linked with the employee's work experience and that working remotely affects both private and professional life. While in our study the time horizon and the sample selection might have impeded more conclusive results, our findings also open the discussion about the direction of the prevailing effects.

5 General Discussion

The digitalization has far-reaching effects not only on our professional life but also on our private life. While some individuals perceive certain changes as beneficial, others regard them as disadvantages. For example, the same technology may represent an ICT demand for one person but a resource for another, depending on individual differences and the way they interact with it (Derks & Bakker, 2010). Organizations are facing rapidly expanding and accelerating technological advancements affecting not only work processes but also work culture (Demerouti et al., 2014). Individuals must assess and determine which type of FWD aligns best with their personal preferences and circumstances. Meanwhile, leaders are challenged to reconcile organizational directives with the diverse individual work arrangements of their subordinates through adapted leadership behaviors. The extent to which individuals, supervisors and organizations benefit from FWD depends on a variety of actors and influencing factors. There rarely seems to be a single ideal solution; instead, effective outcomes require coordinated efforts at multiple levels.

5.1 Theoretical Implications

5.1.1 For organizations

There has been a high amount of research over the last decades, investigating FWD in several different contexts (Allen et al., 2024; Beckel & Fisher, 2022; Gajendran et al., 2024). The work environment has turned out to be an important field of research, as there are many different influencing factors like social norms through supervisor and team expectations, working conditions like ICT equipment and job stressors like work intensity that have a substantial impact on the work experience in FWD (Gadeyne et al., 2018; Lautsch et al., 2009; Thomas et al., 2024). We showed in our study that social norms in FWD can be changed through a workplace intervention (Widler et al., 2025a). Although we found that the change of the social norm was most likely based on the expectation bias, this opens up behavior change opportunities like interventions with normative messages (Goldstein et al., 2008; Perkins & Craig, 2002; Williams et al., 2012). For example, if organizations publish health-supporting normative messages like “95% of your colleagues do not answer work calls during non-work times”, this might counteract an unhealthy culture on organizational level. Moreover, this allows targeting the individual simultaneously with their work environment, which might increase the impact of behavior change initiatives (Bes et al., 2023; Initiative Gesundheit und Arbeit, 2015). Another aspect worth investigating further is the question about the direction of the effects. Current

research considers social norms usually as preceding factors (Derks et al., 2014; Gadeyne et al., 2018; Kühner et al., 2023). However, for a distinct workplace culture or social norms to develop, some observable behavior needs to be present and evaluated in a distinct way (Cialdini et al., 1990). More insights into the development of social norms in FWD would be beneficial in order to use workplace interventions as prevention, even before unhealthy norms fully develop.

We found in our intervention study that open communication within the teams about remote work behaviors and availability expectations as well as the consequent development of joint guidelines taking business requirements and personal boundaries into account was useful (Widler et al., 2025a). Research has so far investigated the introduction of remote work policies with mixed results, when implicit norms are not addressed with it (Barber et al., 2023). We argue that the development of joint workplace policies that involve the affected employees, address social norms and provide a certain autonomy are beneficial and even necessary as prevention measure. This might even counteract the loss of social coherence and organizational identity that is prevalent in FWD because it promotes identity leadership and a joint approach (CIPD, 2020; Shi et al., 2024; Yang et al., 2022). However, further research into the effectiveness of remote work policies is needed.

An area of research that has not yet been explored intensively is learning in FWD (Mühlenbrock et al., 2023). We found in our study that learning through a cascaded *train-the-trainer principle*, where supervisors were instructed to process the learnings and materials provided from our intervention with their teams did not have a significant effect on their employees (Lang et al., 2017; Orfaly et al., 2005; Widler et al., 2025a). This raises the question of how implicit and explicit knowledge sharing is affected by reduced presence in the office, where opportunities to exchange and observe are limited (Bandura, 1977). Particularly, since more senior and experienced employees might be more likely to be able to work independently, this reduces learning opportunities for employees that are, for example, new in a role or responsibility. The consequences of increased remote work for onboarding new employees and knowledge preservation might not be an immediate concern for organizations now; however, it might become more serious in the long term.

So far, most research targets the individual in FWD. However, since working remotely has far-reaching effects not only for the individual, but also for teams, supervisors and working conditions, the organizational level becomes of more interest (Lee, 2023). Eventually, providing beneficial working conditions to employees results in turn in a sustainable management of economics. If organizations realize that despite the increased demands for the implementation, management and support of FWD, there are benefits on a bigger scale, they might be more

willing to provide the required resources. Therefore, future research should include FWD on organizational level and hopefully provide a more holistic picture of the economic effects in order to empower organizations to take on more responsibility.

5.1.2 For individuals

BMT are useful strategies to increase impermeability of boundaries between work and private life which could help avoid negative consequences of FWD (Althammer et al., 2024; Cho et al., 2025; Kreiner et al., 2009). We successfully trained supervisors on BMT in our study, confirming results of previous intervention research (Althammer et al., 2024; Rich et al., 2020; Widler et al., 2025a). With this we add to the empirical evidence that boundary management can be applied in practice and changed through workplace interventions. We included ICT tactics as further development of the scale from Kreiner et al. (2009) to adapt it to FWD (Cho et al., 2025). Future research might elaborate further on the individual contribution of the different tactics regarding specific antecedents and outcomes. This would help tailor the use of BMT to different target audiences and needs.

We described the concept of *responsiveness* as an attribute of work in the digitalization that is characterized by a high amount of interruptions and a lack of autonomy in schedule control (Ott et al., 2021). Responsiveness is found in work situations comprising predominantly incoming communication and work flows like receiving messages and tasks and is linked with negative outcomes like stress (Derks & Bakker, 2010; Rennecker & Godwin, 2005). With this we conceptualized a role characteristic emerging from the digitalization that carries increased demands. Combined with permeable boundaries in FWD, it becomes a risk for health and well-being due to potential boundary violations (Dettmers et al., 2016b; O'Driscoll et al., 2010; Wepfer et al., 2018). This could help explain individual differences in the remote work experience drawing on boundary theory (Ashforth et al., 2000). For example, while some individuals might prefer integration of work and private life, this might be due to their role being characterized by a low degree of responsiveness. In case this changed, their preference might be affected as well. With this we extended boundary management theory to FWD on a theoretical level. However, further research is needed to understand if the construct is useful and serves as reliable and valid predictor for the associated risks.

We introduced *integration enactment* as the unwanted and unplanned role change behavior through for example answering work calls during non-work time (Ott et al., 2021). We aimed to measure the domain-crossing behavior at its source rather than using existing concepts like TASW or extended availability that describe the outcome of preceding role changes or the

prevailing social norm (Dettmers et al., 2016a; Kühner et al., 2023). In our study, we found a significant reduction of integration enactment among supervisors six months after the intervention, although this change did not differ significantly from the control group. While we do have increasing knowledge about antecedents, moderators and consequences of integration enactment, we do not sufficiently understand the actual behavior itself. Therefore, our approach might help to provide more insights into the role change process itself. However, with this as well, further research is needed.

5.1.3 For leadership

Although we did not find immediate evidence for the significance of the congruence between the supervisor's and their employees' remote work intensity, we did find, in line with research, significant associations between supervisors and their employees in FWD (Gan et al., 2023; Lautsch & Kossek, 2011; Thomas et al., 2022; Widler et al., 2025b). Maybe the question for relevant mechanisms is rather *if* the supervisor engages in FWD and not *to which extent* they are congruent with their employees. We found that remotely working supervisors assess the performance of their employees more favorably with increasing RWI (Widler et al., 2025b). It is possible that remotely working supervisors apply more performance-supporting leadership behaviors without their employees reporting it. We did only find small correlations between the supervisors' and the self-report of employees' performance, confirming previous research (Heidemeier & Moser, 2009; Widler et al., 2025b). However, it is also possible that better performing employees increase the likelihood of supervisors to make use of remote work, since their subordinates might not require extensive hands-on leadership. This might indicate that supervisors not only influence their employees' remote work experience, but employees influence their supervisors' remote work. There are still many open questions and research has just started to investigate the role and impact of the supervisor in FWD.

Leadership behaviors like control and support behaviors obtain a special role in FWD (Gan et al., 2023; Parker et al., 2020). Besides more specific support like technological competencies, boundary management between work and private life as well as relationship building in more distant work settings, control behaviors like setting objectives, monitoring and providing feedback also need to adapt (Lautsch & Kossek, 2011; Thomas et al., 2022). Leaders often find themselves in a paradoxical situation. They perceive less control and visibility which might result in reduced trust and in consequence increased demand for control; however, less control behaviors and more autonomy support is associated with improved remote work experience (Gan et al., 2023; Parker et al., 2020). We based our intervention on encouraging supervisors to

establish closer contact and exchange with their employees, to lead more results-oriented and autonomy-supporting and to exercise less direct control (Klebe et al., 2023; Lautsch et al., 2009; Julien et al., 2011). These principles in our E-Learning might have added to our positive results (Widler et al., 2025). Nevertheless, further research into the specific leadership principles in FWD would be of great interest.

Particularly the role model mechanism of supervisors in FWD requires more extensive analysis. While role modelling can be interpreted as model learning, whereas employees observe new behaviors and imitate them, in the literature, supervisor role modelling is also used synonymously with supervisor behavior that makes employees “feel pressured to” mimic it (Bandura, 1977; Hammer et al., 2007, p. 189). The latter definition shows similarities with the social norm, where the supervisor sets expectations through their observable behavior (Dettmers et al., 2016a; Derks & Bakker, 2014). While model learning is usually a process with a positive connotation that allows to make use of new competencies, supervisor social norms are more linked to involuntarily amending behaviors in a negative way. With increasing RWI, model learning opportunities might reduce, while room for social norms might increase. Furthermore, we demonstrated in our study that the supervisors perceived their team members’ behaviors more positively after the intervention, although the team members did not report the same (Widler et al., 2025a). This might indicate a risky blind spot: if the supervisors are convinced of a positive behavior change in themselves, they might overestimate the positive effect in their employees. This calls for more conceptual clarification as well as a deeper understanding of the underlying processes.

5.2 Practical Implications

5.2.1 For organizations

For organizations, implementing FWD comes with consequences at multiple levels. Ideally, when defining a role profile, considerations if a role qualifies for remote work, if any dependencies to subordinates or other stakeholders are affected and which adjustment of working conditions, ICT or training are required, should already be included. Our concept of responsiveness could help organizations to determine which roles are more or less suitable for remote work and potentially require additional measures (Ott et al., 2021). For example, an IT support agent might face more responsiveness than a payroll administrator. Hence, while the latter might engage in remote work with no special boundary management, the previous role might qualify only under certain restrictions. When advertising vacancies, candidates will often

come with established preferences regarding their flexible work arrangements (Lee, 2023). Considering the possibilities the role entails and the hiring supervisor's preferences and experiences in the vacancy might be beneficial to avoid later misalignments in the matching of role and employee.

Moreover, a robust IT infrastructure and carefully evaluated communication processes are necessary when engaging in FWD since ICT hassles, problems occurring when using ICT and lack of support are associated with negative consequences (Day et al., 2012; Demerouti et al., 2014; Hu et al., 2021). Responsiveness is linked with interruptions, often occurring alongside a high volume of incoming communication (Barber & Santuzzi, 2015; Day et al., 2012; O'Driscoll et al., 2010). Limiting the number of different communication channels in an organization and avoiding settings to interrupt work processes like pop-up windows might help to avoid negative implications. We presented an ICT demand checklist in our E-Learning material, sensitizing supervisors for extensive ICT use in their teams (Widler et al., 2025a). While having work available remotely through laptops or smartphones is often a demand shared by employees, organizations might avoid unrestricted boundary-crossing technology. For example, bring your own device (BYOD), where employees allow work applications and processes to be available on their private phones, while usually being reimbursed for expenses is a popular approach that provides cost efficient and flexible management of remote work. However, setting boundaries between work and private life becomes a lot more difficult. Organizations should rather provide mobile work solutions, like a separate work phone or work profiles, that allow for comprehensive detachment from work when switched off.

Organizations also need to assess whether their employees and leaders are sufficiently prepared for the implementation of FWD. Working remotely requires individual competencies like self-management and working well without supervision that might be supported by training courses or supporting tools (Allen et al., 2024). Additionally, strategies to prevent boundary violations like BMT or availability expectations could be part of training and support measures that organizations could offer their employees as a precondition for engaging in FWD. We found that an E-Learning is a well-accepted, cost-efficient and flexible instrument that could serve the purpose (Widler et al., 2025a). Moreover, when organizations offer training like a Workshop or E-Learning, that comprises the supervisor and /or the team, they address not only the competencies and work behavior of the individual, but also the working conditions, allowing for a more holistic and potentially more effective intervention (Barber et al., 2023; Bes et al., 2023; Gadeyne et al., 2018).

Digitalization-driven changes can foster unfavorable social norms such as pressure to be constantly available and respond, expectations of extended availability and an always-on mentality (Barber et al., 2023; Derks et al., 2015; Kingma, 2019). Organizations need to be aware and take measures to counteract these effects in order to avoid the development of an unhealthy work culture and siloed communication structures (Shi et al., 2024; Yang et al., 2022). Open communication and exchange about personal demands, business requirements, boundaries and compromises may help resolve unhealthy social norms (Barber et al., 2023; Lautsch & Kossek, 2011). For example, discussing in the team why some emails are being sent on Sunday evenings, if this is a requirement that others need to react upon and then agreeing that it might be someone's personal preference but not a rule for the rest of the team should bring transparency and avoid pressure to do the same. Guidelines might include a limited number of communication channels, offering basic training on functionality of ICT tools, access to troubleshooting and further training, clear standing on off-times, a warning on constant connection to work as well as confirmation that no availability is expected (and even allowed) during off-times and holidays. Teams might even discuss emergency contact procedures and specific problematic apps like WhatsApp and how they keep in touch without personal boundary violations.

5.2.2 For individuals

Individuals need to carefully evaluate the advantages FWD might bring against the disadvantages they might entail including their personal preferences, competencies and remote working conditions. While the opportunity to work from home might sound tempting at first considering saved time and effort, losing motivation due to isolation, stress through unsupported ICT hassles or interruptions and WF conflict are serious risks (Day et al., 2019; Gadeyne et al., 2018; Gajendran et al., 2024). Besides the general question of engaging in FWD individuals need to decide when and how they implement their remote work. There might be personal demands like childcare synergies or more comfortable commute options, however, business needs, team dynamics and meeting routines need to be considered as well. Also, while many companies do not clearly restrict the amount of remote work, often the expectation is to use an effective split of office-based and remote time. In general, a balance of two to three days of remote work per week at a full pendum seems to be most beneficial in order to seize flexibility but keep an effective connection to work (Allen et al., 2015; Gajendran et al., 2024; Gajendran & Harrison, 2007). However, although flexible work options are often perceived as an employment benefit, not all individuals possess the preference or the capabilities to work successfully at

home (Allen et al., 2024; Gadeyne et al., 2018; Lee, 2023). Also, not all supervisors prefer to lead remotely working employees (Lautsch et al., 2009; Park & Cho, 2022; Parker, 2020). Ideally, individuals already consider flexible work options, support and leadership structures when keeping an eye out for a new role.

When engaging in remote work the personal boundary preference is usually a strong decider if individuals perceive permeable boundaries and frequent role changes as rather beneficial or stressful (Allen et al., 2014; Beckel & Fisher, 2022; Gadeyne et al., 2018). Particularly when segmentation of boundaries between work and private life is preferred, but not exclusively, BMT provide an effective toolbox to prevent unwanted role changes between life domains (Cho et al., 2025; Widler et al., 2025a). For example, if a remote worker participates in a WhatsApp group chat with their supervisor or colleagues, it is quite difficult to reinstall boundaries like exiting the chat even if their preference changes. BMT as active coping strategies to keep boundaries less permeable could help avoid negative consequences of FWD, particularly when the role entails a high degree of responsiveness (Althammer et al., 2024; Cho et al., 2025; Ott et al., 2021). We showed in our study that explaining the concept and benefit of BMT, providing examples and encouraging the compilation of a personalized selection was successful (Widler et al., 2025a). These findings increase confidence that the development of competencies in the broader population is readily achievable.

5.2.3 For leadership

Leadership competencies are often scarce among supervisors, particularly when it comes to leading remotely working employees (Lacerenza et al., 2017; Leslie, 2009; Park & Cho, 2022; Parker et al., 2020). Supervisors might get promoted into a leadership role due to business expertise or time in the organization. Many supervisors have not been trained enough in leadership skills and therefore do not necessarily use leadership instruments like regular meetings with employees (Cortellazzo et al., 2019; Schwartz et al., 2014). They might rely on utilizing information available in the joint workday including indicators of performance like conscientiousness or informal exchanges like coffee breaks. In FWD, where many of these sources of information are no longer or more difficult to access, supervisors might lose the perception of control and visibility that leads them to trust issues and increased control behaviors (Gan et al., 2022; Lautsch et al., 2009; Parker et al., 2020). Therefore, besides regular leadership competencies that entail responsibilities, instruments and behaviors, in FWD, even more leadership capabilities are necessary.

Supervisors need to connect with their employees at least to some extent to build a high-quality relationship (Klebe et al., 2023). This requires supervisors to build up virtual leadership competencies when engaging in FWD, but also when leading remotely working employees (Lautsch et al., 2009; Parker et al., 2020). They need to be able to stay in exchange through virtual meetings, make use of chat rooms and adapt their communication style that allows for informal exchange (Cortellazzo et al., 2019; Klebe et al., 2023; Park & Jae, 2022). For example, supervisors that do not succeed in staying in touch with their employees outside of business communication might miss out on relationship building, which could reduce trust, support and in consequence performance and commitment (Dulebohn et al., 2011; Straub, 2012). Even if supervisors do not engage in FWD themselves, it might make sense to try out remote work anyways to gain first-hand experience and develop more empathy for their remotely working employees (Park & Cho, 2022; Parker, 2020).

Moreover, supervisors have to adapt paradoxical leadership behaviors in FWD: while lack of visibility and physical distance require supervisors to get closer to their employees through for example more regular exchanges, planned time for informal virtual gatherings, more frequent check-ins on demands and results; they should allow for more autonomy and therefore adopt a more results-oriented rather than process-oriented leadership approach that might feel more distant (Gan et al., 2022; Lautsch et al., 2009; Park & Cho, 2022). For example, if a supervisor usually evaluates a subordinate by information they collect alongside a normal workday in the shared office without structured feedback or exchange processes, the supervisor might feel loss of control and visibility when the employee starts working remotely. Rather than checking in on the online status of the employee, which might feel similar to the previous observation-based leadership approach, the supervisor is now required to proactively collect formal but also informal information and engage in deliberate mutual exchange. However, this approach must not reduce the employees' autonomy, since it is a precondition to a positive remote work experience (Gajendran et al., 2024; Metselaar et al., 2022; Slemp et al., 2015). This demonstrates the required change from an office-based *leadership by observation* approach, that does not work anymore in FWD, to an *autonomy-supporting, proactive leadership* style. Therefore, rather than getting in touch to control and monitor the performance process of the remotely working employees, the supervisors should regularly connect with the employees to exchange, provide information and support and focus on the performance results rather than the process. We designed an exemplary approach on how to train supervisors accordingly in our E-Learning intervention (Widler et al., 2025a).

Supervisors serve as role models for their employees (Kelloway & Barling, 2010; Koch & Binnewies, 2015). This includes exemplifying behavior that employees can learn from by observation (Bandura, 1977). Particularly when new in a role or responsibility or when new situations occur, where employees are uncertain about possible courses of action, this is a useful mechanism to increase competencies. On the other hand, role modelling also describes setting expectations through social norms (Hammer et al., 2007). Supervisors need to be aware that their behavior— particularly in FWD, where permeable boundaries and integration enactment are quite common— might set unhealthy expectations for their subordinates (Derks et al., 2015; Stempel et al., 2022). For example, a supervisor might believe that answering emails during non-work time is a necessity in their leadership role and even communicate to their team that they do not need to engage in the same behavior. However, employees will likely relate the supervisor's behavior with commitment, responsibility and engagement and eventually associate a positive attitude with it which they might perceive as worth pursuing. Contrary to this example, a supervisor that protects their boundaries with clear demarcation for work during non-work time could serve as a role model who values personal health over short-term business needs. This might encourage employees to do the same, which certainly provides a more sustainable approach to commitment, responsibility and engagement. Moreover, we found in our study that the perception of the role model behavior between supervisor and employees might differ substantially (Widler et al., 2025b). Therefore, supervisors need to be particularly cautious about the impact their behavior may have on their team members. Instead of relying on their perceptions of their employees' perspectives, they should get in contact with their teams, openly discuss potential social norms and develop a joint ICT policy (Widler et al., 2025a).

5.3 Bringing the perspectives together

Many aspects in FWD are interdependent: the one's integration preference enhances the other's unhealthy social norm; the other's social norm might trigger BMT that serve as role model for the next. Moreover, many facets are mutually conflicting: being a reliable and committed employee might contradict drawing personal boundaries between work and private life. Encouraging employees to protect boundaries might enhance isolation or disturb relationship building (Lautsch et al., 2009). The potential benefits of FWD need to be considered at multiple levels of analysis.

If organizations decide to engage in FWD they might define upfront, what amount of remote work per role, team or leadership level is beneficial. They may take a bold approach by evaluating roles differentiated. For example, new joiners or buddy systems might require different office

presence, roles with increased responsiveness might be allowed remote time only with distinct measures against integration enactment and certain senior staff might have higher demands for personal presence than functional experts.

Ideally, the approach is systematic and communicated upfront, so individuals and organizations find the best match for all involved parties. Transparent communication is important to counteract misunderstandings and social norms. Since collective approaches like shutting down email servers during the weekend did not prove to be successful and are poorly accepted, individual and joint agreements need to be fostered (Barber et al., 2023). Organizations should ensure that remote work conditions are made a topic within teams. They could include team agreements in the performance objective process or reward initiatives to foster informal exchanges or hybrid work solutions. The decision and the management of remote work is neither the employee's call nor the supervisor's alone. It needs to be a framework on organizational level and be encouraged to be adapted in teams and between supervisor and employee.

Since employees perceive FWD as personal benefit and they might be tempted to engage in more remote work because individual demands outweigh business demands, organizations could start to adapt travel expense reimbursement to employee needs. For example, instead of granting every employee a certain contribution of commute expenses per year, organizations could start to reimburse office-days. This would acknowledge the extra time and money that traveling to the office means for many and would support business processes by fostering social exchange. With this, the autonomy and decision of designing remote work still lies with the employee, however, business objectives are supported in a more source-based approach.

Remote leadership needs to be a recognized competency. Besides conventional leadership training, supervisors need to understand that leading remote workers entails specific demands and requires the corresponding additional training. While leadership experience is already a valued competence for individuals and organizations, remote leadership experience should be as well. Training and support for individuals as well as for supervisors should be anchored in organizations just as ICT support is. For example, there is no question that a working internet connection or email server is essential for a business to succeed in FWD. However, leadership and boundary management competencies still need to be taken more seriously.

Employees are usually granted equal and with that *fair* access to FWD without further evaluation of the circumstances. This approach needs to be questioned. If a person is new in a role or does not possess the ability to self-manage without supervision, the question arises whether unrestricted access to remote work would be the best choice for everybody involved. While

organizations and supervisors need to take up responsibility to apply more differentiated and accompanied approaches to remote work, individuals need to step up on their self-responsibility to understand whether their preferences, abilities and circumstances allow for a sustainably successful and healthy remote work experience. Remote work should not be a quick saving in effort, but a well-designed occupational decision that requires planning, competencies and modern job crafting (Wessels et al., 2019).

In Germany, §5 of the Occupational Safety and Health Act (ArbSchG, 1996) requires employers to evaluate all hazards, including psychological factors, that may affect the safety and health of employees. In Switzerland, according to the Swiss Labor Act (ArG, 2023) employers are required to protect employees from psychosocial risks. Derived from this foundation, a potential initiative for the future could be a self-check questionnaire assessing the flexible work environment, the supervisor support and leadership behaviors, the level of responsiveness of the role, the personal preferences, competencies and boundary management tactics. This could consolidate into a holistic evaluation providing an indication whether remote work would be recommended and identifying potential areas that need further attention.

Over the past decades FWD have unfolded upon organizations and employees at times more rapidly and more profoundly than anticipated. It is now time to take an active and self-determined approach to shaping these working conditions to a successful and sustainable work design.

5.4 Limitations and Future Directions

The first limitation to our study concerns the sample selection. Although we were able to collect data in supervisor-employee dyads, which allowed us to analyze direct associations, we were only able to recruit a limited number of participants for our longitudinal study. For some of our multilevel analyses this might have restricted the statistical power to detect smaller effects and the reliability of the found results (Maas & Hox, 2005; Mathieu et al., 2012). Moreover, our sample was highly selective since only volunteering individuals were included, resulting in the risk of increased self-selection bias (Alarie & Lupien, 2021). Participants who choose to engage in our study might have been over-proportionally interested and motivated, which may limit the generalizability of our findings to the broader population (Nielsen & Randall, 2013). For example, supervisors and team members already had significantly lower levels of supervisor norm, team norm and integration enactment compared to the control group at the start of the study (Widler et al., 2025a). This might also have constrained our findings: the potential to achieve gains through the intervention might have been limited by the already high levels at baseline.

All participants in our study worked remotely to at least a small extent. This limited us in comparing the results with non-remotely working employees. While we were able to derive recommendations for individuals engaging in remote work like BMT, it would have been interesting to gain deeper insights into potential effects on non-remotely working employees as well. For example, the social supervisor norm has previously been linked with employees' well-being (Derks & Bakker, 2014; Stempel et al., 2022). The current assumption is that the social norm pressures employees to also engage in boundary violations, which in turn is linked with negative consequences (Day et al., 2012; Kühner et al., 2023). However, the social norm might pose stress on office-based workers as well, since office-based workers can be negatively affected by remotely working supervisors also (Lautsch et al., 2009). Furthermore, phenomena like integration enactment are more dependent on the ICT use and respective boundary permeability than the effective remote work status. To better understand the impact of remotely working supervisors on their employees, it would be worthwhile to include non-remotely working employees in similar studies.

We rolled out our study in the period after the Covid-19 restrictions were lifted and social interactions were increasingly possible. We found that many participants preferred in-persona interventions over online formats. This observation is in line with the phenomenon of *zoom fatigue* that occurred after a long period where only online communication was possible (Aagaard, 2022; Bullock et al., 2022). This might have limited the motivation to participate and diligently process our E-Learning. On the other hand, participants might have engaged in a natural learning curve regarding ICT skills and boundary management anyways through the exposure in the pandemic (König & Seifert, 2022). Our study collected data across a two-year timeframe. A potential simultaneous change in the broader population could have limited the significance of our results. This would be in line with our finding that integration enactment did significantly reduce in supervisors across the measurement waves, however, it did so as well in the control group (Widler et al., 2025).

Furthermore, our results suggest that some effects were part of a multilevel process, in which certain changes triggered other changes that only manifested over time. For example, while increases in BMT in supervisors showed already four weeks after the intervention, changes in integration enactment and the supervisor norm only emerged six months after the intervention (Widler et al., 2025a). While behavior changes might be implemented more quickly, a change in the social norm might require preceding steps like several observations of the new behavior (Cislaghi & Berkowitz, 2021). Integration enactment might in turn be influenced by the social norm and therefore show effects even later in the process. Furthermore, we intended changes

not only in supervisors, but also in their employees. This adds another level in the chain of effects. Therefore, future studies, especially when intending effects from supervisor to employee level, might consider the lengthy process in the study design (Julien et al., 2011; Kelloway & Barling, 2010).

There is still a wide variety in the terminology used in FWD with conceptual overlaps and gaps (Cobb et al., 2022; Hu et al., 2021). For example, while *flexible work* contains a component of timely and local flexibility, *remote work* often describes only the latter. Extended availability, TASW and integration enactment all describe work behaviors crossing the boundaries into private life (Dettmers et al., 2016a; Kühner et al., 2023). Moreover, many scales in the current FWD literature include items that use attributes like “*during evening hours*” or “*on the weekend*” to describe situations outside paid working hours (Derks et al., 2016; Fenner & Renn, 2012). Clearly, in recent years this perception has changed. Timely attributes like *in the evening* are not necessarily perceived outside of working hours anymore. It might rather be someone’s preferred regular working time in a FWD. Also, some existing scales mix behaviors like the personal availability for work with the linked working condition like the supervisor norm (Dettmers et al., 2016a). Therefore, our intention was to construct scales that consider the cultural change in the perception of flexible workers and to measure the actual behavior separately from linked conditions or outcomes. Based on this, we developed a *social supervisor* and *team norm* scale for FWD and a scale for *integration enactment*. These measures yet have to prove whether they meet the required standards and are useful in FWD research. Our new scales make it also more difficult to compare our results to existing research, which calls for further studies (Clark & Watson, 2019).

While we found the supervisor to be linked with their employees in FWD, we did not find indications for the congruence between supervisor’s and employees’ RWI to play a role. However, we did not consider their remote work patterns across the week. For example, supervisors and team members might both have reported two remote working days per week, which could have been on completely different days resulting in no overlap in the office presence nor the home office. Future studies investigating the congruence of behaviors might not only focus on the extent but also the distribution.

Also, we found indications that some relationships might have reciprocal associations. For example, while social norms have been studied up to date as predictors leading to boundary crossing behaviors, we argue that some of these observable behaviors must be present in order for individuals to perceive and evaluate them (Cislaghi & Berkowitz, 2021; Stempel et al., 2022; Park et al., 2011). BMT are strategies to reduce integration enactment, however, they might as

well be coping strategies to react upon demands or threats (Cho et al., 2025; Hobfoll, 1989). Outcomes like WF conflict are influenced by FWD, however, conflict has also shown to play a mediating role (Golden, 2006). And while performance has been investigated as an outcome in FWD, we found indications that performance of employees might influence remote work choices of supervisors (Gajendran et al., 2024; Widler et al., 2025b). Moreover, many studies like ours focus on the work to family direction of effects, although the direction family-to-work might offer further valuable insights. In addition, the organizational level has received little attention to date representing a promising direction for future research (Lee, 2023).

In general, FWD are characterized by many interacting variables on different levels like individual, supervisor and organization making it complex to fully understand how the interdependencies might affect individuals. Therefore, more comprising study designs that include the various actors but also the linked working conditions might allow to draw more holistic conclusions about the antecedents, effects and outcomes of beneficial FWD.

5.5 Conclusion

FWD allow for more flexibility and provide increased options to design work patterns. At the same time, they foster more demanding working conditions and require more active boundary management. We therefore investigated how organizations, individuals and supervisors are affected and how they need to adapt in order to design and manage sustainably beneficial FWD. We identified theoretical and practical implications and provided recommendations on how to converge the perspectives, take responsibility and develop concrete courses of action.

6 References

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7 Appendices

7.1 Research Paper 1: Always on – Grenzen ziehen zwischen Arbeits- und Privatleben in der digitalisierten Arbeitswelt

Abstract

Die technischen und kulturellen Entwicklungen der digitalen Transformation machen Arbeit quasi immer und überall verfügbar. Indem digitales Arbeiten flexibler wird, steigt die Integration unserer Lebensbereiche und die Grenzen zwischen Arbeits- und Privatleben beginnen zu verschwimmen. Digitale Arbeit kann in Abhängigkeit der Informations- und Kommunikationstechnologien (IKT) und der Ausprägung der Integration der Lebensbereiche unterschiedliche Formen annehmen. Das Modell der digitalen Arbeitsformen beschreibt diese und zeigt auf, warum segmentierendes und initiierendes digitales Arbeiten förderlicher für die Gesundheit, die Leistungsfähigkeit und die Vereinbarkeit von Arbeits- und Privatleben ist als integrierendes und responsives digitales Arbeiten. Es zeigt wie konkrete Handlungsempfehlungen für Individuen, Führungskräfte und Teams aussehen können, damit das aktive Gestalten vorteilhafter digitaler Arbeit gelingt.

Digitales Arbeiten als Zukunftstrend mit Chancen und Risiken

Die digitale Transformation verändert unsere Arbeitswelt in rasantem Tempo. Sogenannte New Ways of Working (NWW) zeichnen sich durch moderne IKT aus, die es ermöglichen, unmittelbar und quasi zu jeder Zeit und an jedem Ort zu arbeiten (Demerouti et al. 2014). 2019 lag der Anteil der erwerbstätigen Personen in Deutschland, die wenigstens gelegentlich im Homeoffice arbeiteten, bei 13% (Statistisches Bundesamt Destatis 2021). Während dem ersten Lockdown in der Corona-Pandemie verdreifachte sich der Anteil fast auf 35% (Schröder et al. 2020). Die Covid-19 Pandemie sorgte für einen «unfassbaren Schub in Bezug auf Digitalisierung» (Meyer und Hofmann 2021), wobei die Konnektivität auch für die kommenden Jahre als «Megatrend» gehandelt wird (Papasabbas und Pfuderer 2021).

Gleichzeitig gehen NWW auch mit zahlreichen Veränderungen der Arbeitskultur und -gestaltung einher (Kingma 2019; Wang et al. 2020). Kommunikationsprozesse beschleunigen sich, Kollaboration gewinnt an Bedeutung und ergebnisorientierte Formen der Leistungssteuerung sowie vertrauensbasierte Regelungen zur Arbeitszeit nehmen zu (Kingma 2019; Krause et al. 2015b; Spreitzer et al. 2017). Diese Entwicklung bringt einen hohen Grad an Flexibilisierung für Arbeitende mit sich, gleichzeitig verlagert sich damit auch die Verantwortung für die Arbeitsgestaltung hin zum Arbeitenden (Kingma 2019). So hat etwa jeder vierte Deutsche den Eindruck, es werde oft oder sehr häufig von ihm erwartet, ausserhalb der normalen Arbeitszeiten erreichbar zu sein (Institut DGB-Index Gute Arbeit 2015) zudem arbeiten 15% mehrmals pro Monat oder häufiger in ihrer Freizeit, um die Arbeitsanforderungen zu erfüllen (Eurofound 2020).

Doch was bedeutet es für Arbeitende, wenn durch den Laptop die Arbeit abends zuverlässig neben einem auf der Couch liegt und die Kollegen durch das Smartphone in der Hosentasche ständig mit dabei sind?

Der digitale Wandel und die damit verbundene Integration der Lebensbereiche werden in der Forschung in seinen Auswirkungen als paradox beschrieben (Day et al. 2019). Während erhöhte Flexibilität und Vereinbarkeit von Familie und Beruf als Chance gehandelt werden (Allen et al. 2015; Demerouti et al. 2014; Towers et al. 2006), sieht man in der «Always-on» Mentalität (Derks et al. 2015; McDowall und Kinman 2017), dem «Technostress» und dem «Telepressure» (Ayyagari et al. 2011; Barber und Santuzzi 2015) eine Gefahr für die Gesundheit der Betroffenen.

Um möglichst viele Vorteile nutzen und die Risiken minimieren zu können, ist es daher wichtig, die verschiedenen Formen des digitalen Arbeitens und ihre Auswirkungen auf die Gesundheit, die Leistungsfähigkeit und die Vereinbarkeit von Arbeits- und Privatleben im Detail zu verstehen.

In diesem Beitrag wird ein Modell eingeführt, das verschiedene Formen des digitalen Arbeitens beschreibt, eine systematische Einordnung bisheriger empirischer Ergebnisse zulässt und dabei unterschiedliche – sowohl positive als auch negative – Folgen der verschiedenen Formen des digitalen Arbeitens aufzeigt. Darauf aufbauend werden konkrete Handlungsempfehlungen für verschiedene Zielgruppen abgeleitet.

Digitale Transformation und die Abgrenzung von Arbeits- und Privatleben

Das digitale Arbeiten wird in diesem Beitrag als das Arbeiten mit IKT definiert. IKT sind «Technologien oder elektronische Geräte, die Informationen empfangen, verarbeiten, speichern und versenden können» (Steinmueller 2000, S. 361), z.B. Laptops, Smartphones oder Tablets bzw. Email-Clients, Messenger-Apps oder Dienste zum Kalendermanagement. In Anlehnung an die NWW kann die Arbeit dabei zu flexibler Zeit an einem flexiblen Ort (z.B. abends im Homeoffice) verrichtet werden oder entsprechend klassischer Arbeitsformen zu geregelten Zeiten an einem festen Arbeitsort stattfinden (z.B. Kernarbeitszeit im Büro).

Die digitale Transformation verändert sowohl das Nutzungsverhalten von IKT als auch das Verhältnis von Arbeits- und Privatleben. Aufgrund der arbeitskulturellen und technischen Veränderungen laufen asynchrone Kommunikationsprozesse annähernd synchron ab (z.B. Instant Messaging). Funktionen von Hard- und Software (z.B. akustische oder visuelle Signale, die auf Instant-Messages aufmerksam machen) unterbrechen den Empfänger und animieren ihn dazu, Nachrichten sofort zu lesen und zu beantworten. Arbeitende können zudem von überall und jederzeit arbeiten. Fehlende Regelungen zum Umgang mit IKT und eine Erreichbarkeitskultur verstärken diese Anforderungen (Derks und Bakker 2010; Wilkes et al. 2017), so dass ohne aktives Gegensteuern die Grenzen zwischen Arbeits- und Privatleben leicht verschwimmen können.

Um Chancen und Risiken des digitalen Arbeitens differenziert abzubilden und um Veränderungen der digitalen Transformation sichtbar zu machen, wird das digitale Arbeiten in diesem Beitrag unter zwei theoretischen Perspektiven betrachtet. Die erste Perspektive beschreibt das Nutzungsverhalten von IKT und die zweite das Verhältnis von Arbeits- und Privatleben beim digitalen Arbeiten.

Die wesentliche Funktion von IKT liegt in der Aufgabenbearbeitung in Verbindung mit Kommunikationsprozessen (Wang et al. 2020), wobei man zwischen initiiender und responsiver IKT-Nutzung differenzieren kann (Rennecker und Godwin 2005). Kontaktiert eine Person eine andere, so nutzt sie ihr IKT initiiierend (z.B. eine Chat-Nachricht schicken). Ist eine

Person mittels IKT erreichbar und reagiert sie auf Kontaktforderungen oder Nachrichten, so nutzt sie ihr IKT responsiv (z.B. eine Chat-Nachricht beantworten) (Derks und Bakker 2010; Rennecker und Godwin 2005). Ein initiierendes Verhalten einer Person kann bei einer anderen Person responsives Verhalten erzeugen.

Die Boundary Theory (Ashforth et al. 2000) stellt auf einem Segmentations-Integrations-Kontinuum dar, wie gross der Abstand zwischen verschiedenen Lebensbereichen, hier zwischen Arbeits- und Privatleben, ist. Ein hohes Mass an Segmentation bedeutet eine klare Trennung. Je näher sich Arbeits- und Privatleben sind, bzw. je mehr sich beides überschneidet, desto stärker ist die Integration ausgeprägt. Die Flexibilität und die Permeabilität sind zwei Parameter, die die Stärke der Grenzen zwischen den Lebensbereichen bestimmen (Ashforth et al. 2000). Eine hohe Flexibilität lässt zu, dass die Arbeitsrolle auch im Privaten einfach eingenommen werden kann. Sie wird häufig durch die Arbeitsbedingungen bestimmt (z.B. Möglichkeit zum Homeoffice) (Allen et al. 2014). Ist die Permeabilität hoch, so sind die Grenzen zwischen Arbeits- und Privatleben durchlässig (z.B. Erhalten von arbeitsbezogenen Nachrichten in der Freizeit) (Ashforth et al. 2000).

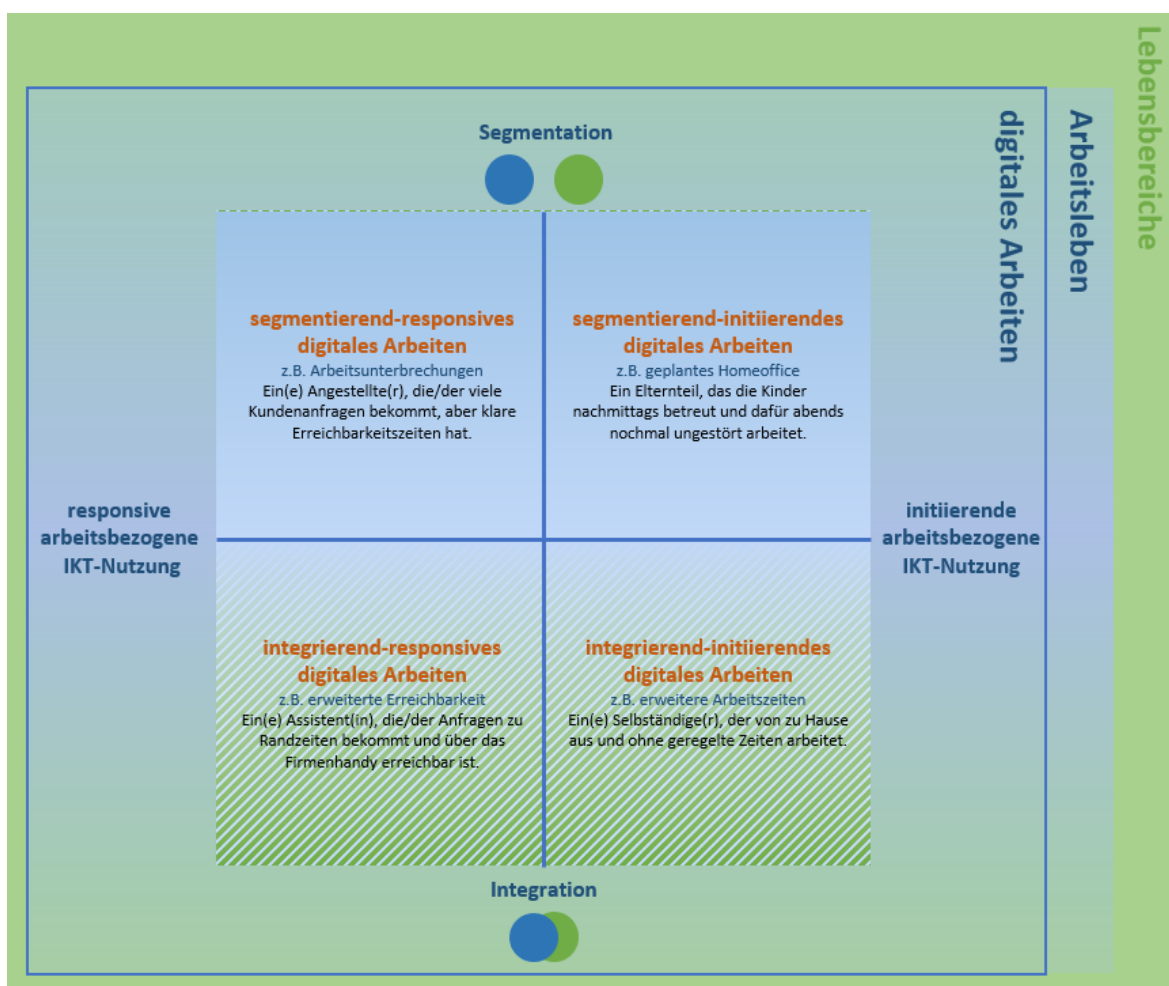
Aus der Arbeitssituation ergeben sich Integrationsanforderungen, die auf Arbeitende einwirken. Integrationsanforderungen werden in diesem Beitrag als Arbeitsbedingungen definiert, die dazu führen, dass die Integration von Arbeits- und Privatleben bei Arbeitenden steigt. In Anlehnung an Kossek (2016a) werden dabei formelle Integrationsanforderungen, die sich aus festen Regeln und organisationalen Strukturen ergeben (z.B. Stellen eines Firmenhandys) und informelle Integrationsanforderungen, die aus sozialen Normen entstehen (z.B. übliche Erreichbarkeit ausserhalb der Arbeitszeit im Team) unterschieden.

Boundary Management (Ashforth et al. 2000) beschreibt, wie Menschen auf Integrationsanforderungen reagieren und die Grenzen zwischen verschiedenen Lebensbereichen herstellen und aufrechterhalten. Menschen wenden dazu unterschiedliche Segmentationsstrategien an (Kreiner et al. 2009). Im Rahmen der digitalen Transformation können viele der persönlichen Segmentationsstrategien (z.B. den Computer im Büro «hinter sich» lassen) nicht mehr angewendet und müssen angepasst oder neu entwickelt werden (z.B. Laptop nach dem Arbeitstag aus dem Sichtfeld entfernen, getrennte Apps für Geschäftliches und Privates auf dem Smartphone nutzen).

Modell der digitalen Arbeitsformen und deren Auswirkungen auf Gesundheit, Leistungsfähigkeit und die Vereinbarkeit von Arbeits- und Privatleben

Ziel ist es, die Chancen und Risiken des digitalen Arbeitens einzuordnen und zu verstehen, wo Interventionen zur Vereinbarkeit von Arbeits- und Privatleben ansetzen können. Dazu werden die Wechselwirkungen zwischen dem Ausmass an Integration bzw. Segmentation und der IKT-Nutzung berücksichtigt. Die IKT-Nutzung ist meistens eine Mischung aus responsivem und initiiertem Verhalten, die jedoch je nach Tätigkeit einen grösseren Schwerpunkt in eine Richtung aufweisen kann. Das Modell der digitalen Arbeitsformen betrachtet die IKT-Nutzung in Abhängigkeit der Ausprägung der Integration bzw. Segmentation. Daraus ergeben sich vier Formen des digitalen Arbeitens (Abbildung 1), die im Folgenden erläutert und hinsichtlich ihrer Chancen und Risiken beschrieben werden.

Abbildung 1 Das Modell der digitalen Arbeitsformen



Segmentierend-responsives digitales Arbeiten

Ein(e) Angestellte(r) mit viel Kundenkontakt und Koordinationsaufgaben befindet sich hauptsächlich im responsiven digitalen Arbeiten. Durch viele Unterbrechungen, häufige Wechsel zwischen Aufgaben und dem zeitigen Beantworten von Nachrichten, kommt es zu Rollenwechseln innerhalb der Arbeitsrolle und einer eingeschränkten Autonomie in der Planung des Arbeitsablaufs (Rennecker und Godwin 2005; Wilkes et al. 2017). Wenn durch klare Erreichbarkeitszeiten oder eine Übergabe nach Schichtende die Arbeit begrenzt wird, kann nach Beenden der Arbeit in die Privatrolle gewechselt werden. Die Integrationsanforderungen bleiben trotz hoher Responsivität gering, was als segmentierend-responsives digitales Arbeiten bezeichnet wird. Die Ereignisse innerhalb der Arbeit selbst werden jedoch von Mitarbeitenden als negativ empfunden (Braukmann et al. 2017) und sind mit Beanspruchung verbunden. So kann es zu Verzögerungen bei der Bearbeitung von Aufgaben und zu wahrgenommener Überlastung kommen (Derks und Bakker 2010; O’Driscoll et al. 2010; Brummelhuis et al. 2012). Kann man die IKT-Nutzung nicht selbst steuern und sich seine Zeit nicht selbst einteilen (z.B. durch hereinkommende Anrufe oder Aufgaben), führt dies zu Stress und emotionaler Erschöpfung (Day et al. 2012; Dettmers et al. 2016a; Kattenbach et al. 2010).

Integrierend-responsives digitales Arbeiten

Auch beim integrierend-responsiven digitalen Arbeiten finden Unterbrechungen durch die responsive IKT-Nutzung statt. Anders als beim segmentierend-responsiven digitalen Arbeiten überschreitet hier die Arbeit die Grenze zum Privatleben, indem Arbeitende mittels IKT für arbeitsbezogene Dinge erreichbar sind und Anrufe oder Nachrichten empfangen und beantworten. Dies kann beispielsweise bei einer/einem Assistent(in) der Fall sein, die/der persönlich für eine Führungskraft zuständig ist, die sich häufig erst zu Randzeiten meldet. Dabei finden unkontrollierte Rollenwechsel vom Privatleben in die Arbeitsrolle statt und es kann zu einem Verschwimmen der Rollen kommen (Matthews et al. 2010; Middleton und Cukier 2006). Das Phänomen der arbeitsbezogenen erweiterten Erreichbarkeit (Dettmers et al. 2016a) weist grosse Überschneidungen mit dem integrierend-responsiven digitalen Arbeiten auf und ist häufig mit negativen Folgen verbunden. Bereits die gedankliche Antizipation von Kontaktierungen oder hereinkommenden Aufgaben verhindert, dass Betroffene sich von arbeitsbezogenen Gedanken und Gefühlen distanzieren können (Ruderman et al. 2016).

Personen, die ausserhalb ihrer regulären Arbeitszeit für berufliche Dinge mittels IKT erreichbar sind, haben eine höhere emotionale Erschöpfung und höheren subjektiv empfundenen Stress als weniger erreichbare Menschen (Day et al. 2012; Dettmers et al. 2016b; Dettmers 2017).

Zudem sind sie öfters von psychosomatischen Beschwerden, wie Kopfschmerzen und schlechterem Schlaf betroffen (Arlinghaus und Nachreiner 2014; Braukmann et al. 2017; Hassler et al. 2016; Lanaj et al. 2014). Je stärker sich Arbeits- und Privatleben überschneiden, desto weniger Erholungsaktivitäten nehmen Arbeitende auf (Derks et al. 2014a). Dementsprechend können sie schlechter von der Arbeit abschalten und sich nicht so gut erholen (Barber und Santuzzi 2015; Derks et al. 2014c; Hassler et al. 2016). Betroffene empfinden weniger Kontrolle über ihre Freizeitaktivitäten (Dettmers et al. 2016b). Erleben Menschen geringe Kontrolle über den eigenen Zeitplan und sind ihre Grenzen für Arbeitsbelange durchlässig, so können sie private Verpflichtungen schlechter erfüllen (Chen und Karahanna 2014) und es kann zu Konflikten zwischen Arbeits- und Privatleben kommen (Allen et al. 2014; Amstad et al. 2011; Tausig und Fenwick 2001).

Integrierend-initiiertes digitales Arbeiten

Unklarer ist die Situation im integrierend-initiierten digitalen Arbeiten. Wie häufig bei Selbständigen oder Manager(inne)n mit unregelmäßigen Arbeitszeiten zu beobachten ist, werden Privat- und Arbeitsleben oft nicht mehr klar getrennt (Menz et al. 2016). Gleichzeitig erlaubt die initiiierende IKT-Nutzung eine hohe Kontrolle über das Strukturieren der Arbeit. Dieser Form des digitalen Arbeitens können unterschiedliche persönliche Einstellungen und Arbeitsbedingungen zu Grunde liegen, wie z.B. eine hohe Integrationspräferenz oder eine hohe Arbeitslast. Kennzeichnend ist, dass viele Wechsel zwischen Privat- und Arbeitsleben vollzogen werden und die Abgrenzung der Rollen nicht immer klar ist.

Das integrierend-initiierte digitale Arbeiten ist sowohl mit Chancen als auch Risiken verbunden. Das wird zum Beispiel daran erkennbar, dass die gleiche Tätigkeit, nämlich «eine arbeitsbezogene Aufgabe zu Hause zu bearbeiten», sowohl positiv als auch negativ bewertet werden kann (Braukmann et al. 2017). Für Personen, die am digitalen Arbeiten Freude haben oder einen Sinn darin sehen (autonome Motivation), zeigt sich ein positiver Zusammenhang zur Stimmung und zur Fähigkeit abzuschalten (Ohly et al., 2014). Positiv verstärkend kommt hinzu, dass Menschen mit autonomer Arbeitsmotivation im Vergleich zu anderen weniger stark abschalten müssen, um sich wohl zu fühlen (Olafsen und Bentzen 2020). Fühlen sich Menschen zum digitalen Arbeiten z.B. durch Vorgaben oder der Erwartungshaltung anderer verpflichtet (kontrollierte Motivation), so kann dies mit erhöhter Beanspruchung und verminderter Leistung verbunden sein (Cooper und Lu 2019; Ohly und Latour 2014).

Allein das Vorhandensein von arbeitsbezogenen IKT kann Menschen dazu bewegen, diese auch zu nutzen und z.B. im Privatleben regelmässig Emails zu checken und gedanklich mit der Arbeit

verbunden zu bleiben (Fenner und Renn 2004; Jarvenpaa und Lang 2005), was zu schlechter Erholung führt (Park et al. 2011). Im Gegensatz zu responsiver IKT-Nutzung ist die initiiierende IKT-Nutzung mit Kontrolle über die eigene Zeit und die Kontakte verbunden (Derks und Bakker 2010), was die negativen Effekte des integrierenden digitalen Arbeitens auf das Befinden abpuffern kann (Dettmers et al. 2016a). Dies könnte erklären, warum Mitarbeitende das Arbeiten ausserhalb der Arbeitszeit kurzfristig als Entlastungsstrategie wahrnehmen (Menz et al. 2016).

Zu erwähnen ist jedoch, dass integrierend-initiiierendes digitales Arbeiten häufig aufgrund von hoher Arbeitslast stattfindet (Braukmann et al. 2017) und so zu einer Ausdehnung der Arbeitszeiten (Cooper und Lu 2019; Fenner und Renn 2004) und damit verbunden zu schlechtem Abschalten und mehr Konflikten zwischen Arbeit und Privatleben (Byron 2005) führt.

Bewertet man also das integrierend-initiiierende digitale Arbeiten positiv und hat man genug Handlungsspielraum, so können sich daraus kurzfristig Vorteile ergeben. Fühlt man sich fremdbestimmt, so ist von negativen Folgen auszugehen.

Segmentierend-initiiierendes digitales Arbeiten

Zuletzt beschreibt das segmentierend-initiiierende digitale Arbeiten eine Kombination aus selbstgesteuertem digitalen Arbeiten und klaren, abgegrenzten Rollen. Das Elternteil, das am Nachmittag das Arbeiten geplant beendet, um die Kinderbetreuung zu übernehmen und abends dafür im Homeoffice die Arbeit zu Ende führt, kann mit wenigen Unterbrechungen und Rollenwechseln einen flexiblen Ablauf gestalten. Anders als beim integrierenden Arbeiten sorgen Arbeitende durch die selbstbestimmte und klare Einteilung von Arbeitszeiten, durch das Setzen von Zielen und Prioritäten dafür, dass die arbeitsbezogene IKT-Nutzung klar begrenzt wird und sich die Lebensbereiche nicht unkontrolliert überlagern.

Segmentierend-initiiierendes digitales Arbeiten geht deshalb oft mit positiven Folgen einher. So können Arbeitende die Vorteile der Möglichkeit zum flexiblen Arbeiten nutzen, um sowohl private als auch berufliche Dinge entsprechend der eigenen Bedürfnisse in den Tagesablauf zu integrieren (Parasuraman und Greenhaus 2002). Dies ist mit besserem Abschalten (Park et al. 2011), höherer Produktivität und Zufriedenheit (Baltes et al. 1999) sowie weniger Konflikten zwischen Arbeit und Privatleben verbunden (Fenner und Renn 2010; **Matthews und Barnes-Farrell 2010, Matthews et al. 2010**). Zudem profitieren Arbeitende von Übertragungseffekten zwischen den Rollen, indem sie z.B. Kompetenzen aus dem Arbeitsbereich auch im Privatleben anwenden können (Barnett und Hyde 2001; Wiese et al. 2010).

Studien zeigen, dass ein moderates Mass an Homeoffice mit hoher Arbeitszufriedenheit, hoher Bindung, guter Leistung, geringer Erschöpfung und weniger Konflikten zwischen Arbeit und Privatleben assoziiert ist (Allen et al. 2015). Das segmentierend-initiiierende digitale Arbeiten erlaubt also, die positiven Effekte von initiierender IKT-Nutzung, wie z.B. vereinfachte Koordination, Kommunikation und Zusammenarbeit sowie Produktivität zu nutzen (Braukmann et al 2017; Day et al. 2019) ohne die möglichen Risiken der Integration einzugehen.

Zusammenfassung

Es lässt sich sagen, dass ein hohes Mass an responsiver IKT-Nutzung sowie ein hohes Mass an Integration Risiken für Arbeitende mit sich bringen, auch wenn persönliche Faktoren, wie z.B. die Segmentationspräferenz (Kreiner et al. 2006) oder wahrgenommene Vorteile (**Dettmers und Biemelt 2018**) negative Effekte abschwächen können. Deshalb liegt in den Bereichen des integrierend-responsiven und des integrierend-initiiierenden digitalen Arbeitens der höchste Handlungsbedarf. Das segmentierend-initiiierende digitale Arbeiten scheint hingegen eher positive Folgen für Arbeitende mit sich zu bringen, so dass diese Form gefördert werden sollte.

Digitales Arbeiten aktiv gestalten - Handlungsempfehlungen

Interventionen zum Boundary Management haben zum Ziel, responsive IKT-Nutzung zu reduzieren sowie übermässigen Integrationsanforderungen entgegenzuwirken. Es wird also tendenziell eine Verlagerung von integrierend-responsivem zu segmentierend-initiiierendem digitalem Arbeiten angestrebt. Dies kann durch die Gestaltung der formellen und informellen Integrationsanforderungen und durch die Anwendung von Segmentationsstrategien umgesetzt werden. Im Folgenden werden Handlungsempfehlungen und Interventionsansätze für die Zielgruppen Arbeitende, Führungskräfte und Teams beschrieben. Dieser Ansatz stimmt mit Ansätzen aus der Anwendungsforschung überein (Kossek 2016b).

Die Forschung zeigt, dass das individuelle Boundary Management zu grossen Teilen durch die Rahmenbedingungen der Arbeit beeinflusst wird (Kossek 2016a). Dabei kann insbesondere die von den NWW beeinflusste Arbeitsgestaltung eine Hürde darstellen. Hat die eigene Abgrenzung z.B. zur Folge, dass persönliche berufliche Ziele nicht erreicht werden können oder ergeben sich daraus negative Konsequenzen für das Team, kann dies davon abhalten, individuelle Segmentationsstrategien umzusetzen (Krause et al. 2015a). Interventionen auf Ebene von Führungskräften und Teams können hier einen Anstoss geben, den Umgang mit den NWW zu reflektieren und die Möglichkeiten innerhalb des eigenen Einflussbereiches gemeinsam auszuschöpfen.

Zudem fällt es vielen Menschen schwer, das Verhalten, was sie sich vorgenommen haben, tatsächlich langfristig im Alltag umzusetzen (Hagger und Luszczynska 2014). Führungskräfte und Teams stellen für einzelne Mitarbeitende einen Teil der Verhältnisse dar, agieren jedoch gleichzeitig selbst als Individuen (Derks 2014b; Koch und Binnewies 2015). Die vorgestellten Handlungsempfehlungen sollten deshalb in Interventionen zur Verhaltensänderung eingebettet werden.

In einem Kooperationsprojekt der Fachhochschule Nordwestschweiz und der Universität Neuenburg werden spezifische Interventionen für alle drei Zielgruppen entwickelt und evaluiert.

Das Individuum als handlungsfähiger Akteur

Zentraler Ansatzpunkt für Individuen ist das Anwenden von Segmentationsstrategien, um mit bestehenden Integrationsanforderungen umzugehen. Kreiner et al. (2009) beschreiben verschiedene Typen von Segmentationsstrategien, die dazu dienen, individuelle Grenzen zwischen der Arbeit und dem Privatleben zu ziehen oder aufrecht zu erhalten. Die Strategien helfen dabei Rollenklarheit zu schaffen sowie den Umgang mit unterschiedlichen Rollen zu erleichtern (Ashforth et al. 2000). Die Strategien zeigen sich in einzelnen, alltäglichen Verhaltensweisen, die von Mensch zu Mensch unterschiedlich sein können (Kreiner et al. 2009). Aus dem Modell der digitalen Arbeitsformen geht hervor, dass für das digitale Arbeiten spezifische Segmentationsstrategien notwendig sein können. Deshalb werden die Segmentationsstrategien von Kreiner et al. (2009) für das digitale Arbeiten adaptiert und ergänzt (Tabelle 1). Die Umsetzung in der Praxis erfolgt in zwei Schritten:

1. Status-Check. Die/der Arbeitende setzt sich zunächst bewusst mit seiner aktuellen Situation auseinander, um seinen Handlungsbedarf zu ermitteln. Dabei kann er auch reflektieren, von welchen Vorteilen er durch das aktuelle Ausmass an Integration profitiert.
2. Umsetzung von Segmentationsstrategien. Erlebt die/der Arbeitende eine Inkongruenz zwischen gewünschter und realer Integration bzw. Segmentation, kann er zum einen bestehende Strategien bewusst festigen und sich zum anderen neue Strategien aneignen.

Tabelle 1 *Segmentationsstrategien im digitalen Arbeiten, adaptiert und erweitert nach Kreiner et al. (2009)*

Themenfeld	Segmentationsstrategien und ausgewählte Beispiele
IKT-Nutzung	Eigene Responsivität steuern <ul style="list-style-type: none"> - Endgeräte abschalten - Notification Manager einrichten - Erreichbarkeits-Filter setzen, um nur für bestimmte Personen ausserhalb der Arbeitszeit erreichbar zu sein
	Initiiierende IKT-Nutzung steuern <ul style="list-style-type: none"> - Wenn der Bedarf besteht, aus dem Privatleben heraus in die Arbeitsrolle zu wechseln, ein klares Zeitfenster mit Ziel setzen (Timeboxing) - Eigene Zeiterfassung oder Bildschirmzeiten dokumentieren, um ein Ausdehnen von Arbeitszeiten zu vermeiden
Physisch	Arbeit und Privates räumlich voneinander trennen, (metaphorische) Distanz schaffen <ul style="list-style-type: none"> - Festgelegter Arbeitsplatz im Homeoffice, der nicht für Privates genutzt wird - Getrennte Endgeräte und Apps für Privates und Arbeit, arbeitsbezogene Apps in einen separaten Ordner auf dem Smartphone ablegen
	Klare Zeiten für Arbeit und Privates planen, Zeiten für Erholung einplanen <ul style="list-style-type: none"> - Zeiten für Arbeit und Privates flexibel gestalten, jedoch klar einteilen - «Auszeiten» von der Arbeit und für Zeit mit Freunden, der Familie und Hobbies einplanen
Kommunikation	Eigene Grenzen vorab kommunizieren und Störungen ansprechen <ul style="list-style-type: none"> - An- und Abwesenheiten sichtbar für andere in den Kalender eintragen - Statusmeldung in Kommunikationssoftware nutzen
	Sich mit Arbeitskontakten (Führungskraft, Team) abstimmen <ul style="list-style-type: none"> - Mit der Führungskraft und dem Team über Bedürfnisse zur Vereinbarkeit von Arbeit und Privatleben sprechen
Verhalten	Sich Unterstützung suchen <ul style="list-style-type: none"> - Vertretungsregelungen einrichten - Mit Freunden / Familienmitgliedern Absprachen treffen und sich daran erinnern lassen
	Prioritäten setzen <ul style="list-style-type: none"> - Mentale Prioritätenlisten definieren, welche arbeitsbezogenen und privaten Verpflichtungen zentral sind.
	Routinen zum Übergang zwischen Privat und Arbeitsleben: klarer Einstieg und klarer Ausstieg mittels symbolhafter Routinen, z.B.: Laptop und Smartphone bewusst an- bzw. ausschalten <ul style="list-style-type: none"> - Etwas Trinken, Kleidung wechseln

Die Führungskraft als Möglichmacher

Die Führungskraft wirkt auf zweierlei Arten auf das digitale Arbeiten. Einerseits durch das eigene Verhalten durch Segmentationsstrategien und IKT-Nutzung und andererseits durch die Integrationsanforderungen in Form von Vorgaben und Erwartungen (Franke et al. 2014; Hammer et al. 2009). Eine Führungskraft, die selbst wenig auf die Vereinbarkeit von Arbeits- und Privatleben achtet und dieser keinen hohen Wert zumisst, beeinflusst durch ihre Vorbildfunktion und die entstehenden Normen das Verhalten der Mitarbeitenden negativ (Derks et al. 2014b). Auch das IKT Nutzungsverhalten der Führungskraft kann den Mitarbeitenden den Eindruck vermitteln es sei üblich und zu erwarten, am Wochenende Emails zu verschicken oder kontaktiert zu werden. Darüber hinaus macht die Führungskraft Vorgaben über die eingesetzten IKT, sowie über den Handlungsspielraum, den die Mitarbeitenden zum Ausführen ihrer Arbeitsaufgaben und deren Organisation erhalten. Dabei werden Anforderungen aus dem Arbeitsleben oft durch Einschränkungen in anderen Lebensbereichen kompensiert (Knecht et al. 2016). Die Tabelle 2 beschreibt Handlungsempfehlungen für Führungskräfte für die Gestaltung des digitalen Arbeitens.

Das Team als Gestalter

Ein zentraler Ansatzpunkt im Team ist die Gestaltung von Integrationsanforderungen. Dabei spielen soziale Normen in Sinne von informellen Integrationsanforderungen eine zentrale Rolle, da sie das Verhalten der/des Einzelnen wesentlich beeinflussen. Sie werden als gemeinsame Verhaltensstandards definiert, die durch das Verhalten von Mitgliedern innerhalb einer Gruppe geprägt werden und für diese gelten (Cialdini und Trost 1998). Dabei sind sowohl Führungskräfte (siehe Kapitel 4.2) als auch die Teammitglieder von Bedeutung. Je stärker die Normen ausgeprägt sind, desto geringer wird der Einfluss des Individuums auf die Gestaltung seiner Grenzen (Ashforth et al. 2000). So hängt die IKT-Nutzung und das Segmentationsverhalten von Mitarbeitenden massgeblich davon ab, wie sich die anderen Teammitglieder verhalten (deskriptive Norm), welche Erwartungen die Mitarbeitenden wahrnehmen (subjektive Norm) und ob Segmentationsverhalten mit negativen Folgen assoziiert wird (injunktive Norm) (Koch und Binnewies 2015; Derks et al. 2014b; Derks et al. 2014c; Park et al. 2011). Soziale Normen bestimmen auch, ob strukturelle Rahmenbedingungen zur besseren Vereinbarkeit von Arbeits- und Privatleben in Unternehmen von den Mitarbeitenden in Anspruch genommen werden (z.B. ein Teamklima, das Mitarbeitende darin unterstützt, flexible Arbeitszeiten zu nutzen, ohne dafür sanktioniert zu werden) (Kossek 2016 a).

Tabelle 2 Handlungsempfehlungen für Führungskräfte (In Anlehnung an Straub 2012 und Crain und Stevens 2018)

Themenfeld	Handlungsempfehlungen und ausgewählte Beispiele
Gesundheitsorientierung	<p>Verständnis für die Chancen und Risiken der verschiedenen Formen des digitalen Arbeitens sowie deren Auswirkungen auf Gesundheit, Wohlbefinden und Leistung schaffen</p> <ul style="list-style-type: none"> - Bewusstsein für eigenes IKT-, Integrations- und Segmentationsverhalten bilden - Vorbildfunktion wahrnehmen - Gesundheitsorientiert führen
Vorgaben & Erwartungen kommunizieren	<p>Individuelle Bedürfnisse der Mitarbeitenden verstehen und eine gemeinsame, abgestimmte und transparente Arbeitsweise bilden</p> <ul style="list-style-type: none"> - Arbeitszeiten und -flexibilität regeln - Abwesenheiten respektieren - Transparenz durch geteilte Kalender erhöhen - IKT-Nutzung klären (keine private Hard- oder Softwarenutzung) - Reaktionszeiten besprechen - Verhalten für Notfälle vereinbaren
Unterstützung geben	<p>Emotionale sowie instrumentelle Unterstützung zum digitalen Arbeiten bieten</p> <ul style="list-style-type: none"> - Interesse und Verständnis für die persönliche Situation des Mitarbeitenden zeigen - Zum Abschalten ermutigen - Arbeitslast thematisieren - Vertretungsregelungen schaffen - Kompetenz zur Anwendung von IKT schaffen - Unterstützung beim Einrichten und Umsetzen des Homeoffice bieten - Erreichbarkeitszeiten intern und extern kommunizieren
Autonomieunterstützung	<p>Handlungsspielraum einräumen, um eine Verlagerung zu positiveren Formen des digitalen Arbeitens zu erreichen</p> <ul style="list-style-type: none"> - Höhere Entscheidungskompetenz einräumen - Kontrolle über die Organisation des Arbeitsalltags geben - Gestaltungsfreiraum über die Vollständigkeit und Gestaltung der Aufgaben erlauben

Die Intervention sollte als allgemeine Intervention zur Arbeitsgestaltung eingeführt und mit den Unternehmenszielen verknüpft werden, um die Akzeptanz der Massnahme zu erhöhen (Kossek 2016 a). Zunächst werden im Team kritische Situationen ermittelt, die eine hohe Responsivität erfordern und in denen eine hohe Integration von Arbeits- und Privatleben stattfindet. Insbesondere Situationen, in denen andere durch initiiierende IKT-Nutzung Teammitglieder zu Respondern machen, können hier thematisiert werden. In Bezug auf diese Situationen wird Klarheit über strukturelle Rahmenbedingungen geschaffen und bestehende Normen werden explizit gemacht. Dies bedeutet abzugleichen, welches Verhalten in den betreffenden Situationen üblich ist, welche Erwartungen die Teammitglieder verspüren und an die anderen Teammitglieder haben, und welche Konsequenzen drohen, falls von der Norm abgewichen wird. Bei diesem Schritt kann es sinnvoll sein, gemeinsam zu hinterfragen, welche Werte den aktuellen Normen zu Grunde liegen. Im nächsten Schritt werden im Team gewünschte Verhaltensweisen erarbeitet. Dabei können auch bestehende Regeln angepasst und gemeinsame Segmentationsstrategien entwickelt werden. Das Team hält diese in einer gemeinsamen Etikette zum digitalen Arbeiten (Day et al. 2019) explizit fest. Damit die Etikette seine Wirkung in Form von veränderten sozialen Normen entfaltet, ist es wichtig, dass die Teammitglieder und insbesondere die Führungskraft, diese in ihren Alltag transferieren und in Form von regelmässigen Retrospektiven zum Thema machen.

Das Team kann an folgenden Punkten zur Reduktion der Integrationsanforderungen und Unterstützung der idiosynkratischen Segmentationsstrategien ansetzen (in Anlehnung an Day et al. 2019). Die Inhalte orientieren sich dabei an den Empfehlungen der Kapitel 4.1 und 4.2.

- Klare Regelung von Arbeitszeiten
- Klärung von Kommunikationswegen und -kanälen
- Regelungen zum Umgang mit hoher Arbeitslast
- Transparenz von An- und Abwesenheiten
- Regelungen zu responsiver IKT-Nutzung während der Arbeitszeit
- Regelungen zu responsiver und initiiender IKT-Nutzung im Privatleben

Vielleicht nicht immer «Always-on»?

Das vorgestellte Modell der digitalen Arbeitsformen vereint etablierte Theorien des Boundary Managements mit dem Nutzungsverhalten von IKT und zeigt damit deren komplexe Wechselwirkungen vor dem Hintergrund der digitalen Transformation auf. Dabei zeigt sich, dass sowohl die Art der IKT-Nutzung als auch die Integration der Lebensbereiche eine Rolle bei der

Realisierung der Chancen und Risiken des digitalen Arbeitens spielt. Die präsentierten verschiedenen Formen des digitalen Arbeitens lassen eine differenzierte Einordnung der bestehenden Forschungsergebnisse zu und helfen dabei, das Paradox der NWW aufzulösen.

Die Organisation und das Management von digitaler Arbeit liegen nicht nur in der Verantwortung der Mitarbeitenden, sondern auch in der der Unternehmen (Kossek 2016a). Werden Vernetzung und Flexibilität vorausgesetzt, ist es notwendig, die Mitarbeitenden auch dahingehend auszustatten, zu schulen und zu begleiten. Die beschriebenen Handlungsempfehlungen berücksichtigen diesen Aspekt mit Interventionsansätzen auf verschiedenen Ebenen: das aktive, positive Verhalten durch Segmentationsstrategien zu verstärken und gleichzeitig die Integrationsanforderungen zu reduzieren. Dadurch können Massnahmen für die persönliche Entwicklung sowie die Entwicklung von Führungskräften und Teams abgeleitet werden, die jeweils präventiv oder auch als Intervention eingesetzt werden können.

Wir erleben, dass die digitale Transformation die Türe zwischen unserer Arbeit und unserem Privatleben weit öffnet, so dass die Arbeit entsprechend leicht in unser Privates vordringen kann. Das Modell der digitalen Arbeitsgrenzen eröffnet Perspektiven für Einzelpersonen und Organisationen, wie sie ihre «Online»-Arbeitszeit bewusst und aktiv gestalten können.

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7.2 Research Paper 2: Leading to Boundary Management: An Intervention for Supervisors Targeting Integration Enactment, Social Norms and Boundary Management Tactics

Abstract

Recent research shows that flexible work designs might lead to blurred boundaries between work and private life facilitating integration enactment when work intrudes into the non-work domain. Therefore, it is important to understand what workers can do to prevent integration enactment and associated risks for health and wellbeing. We designed and carried out an online training intervention for supervisors to reduce integration enactment, change the associated social norms and increase boundary management tactics (BMT) in supervisors and their team members. We evaluated the intervention effects at supervisor ($N = 53$) and team member ($N = 155$) levels and compared them to a control group ($N = 275$ supervisors and $N = 517$ team members) in a four-wave longitudinal study using multilevel analyses. Results suggested that team norm and BMT changed more for supervisors in the intervention than in the control group until several weeks post-intervention, while changes in integration enactment did not differ between groups. This intervention study adds to the boundary management intervention research and emphasizes the role of the individual as well as the supervisor to reduce integration enactment.

Keywords: boundary management, integration enactment, social norms, boundary management tactics, ICT, leadership, intervention.

Leading to Boundary Management: An Intervention for Supervisors Targeting Integration Enactment, Social Norms and Boundary Management Tactics

The digitalization changes the way we interact at work. Information and communication technologies (ICT) make it possible to engage in temporally and locally flexible work designs (FWD) (Allen et al., 2024). This also induced a change in work culture like in speed of response and expectations of availability (Barber & Santuzzi, 2015; McMillan & Shockley, 2019). Consequently, the boundaries between our life domains become more permeable and our work and private lives are more and more intertwined with frequent changes from one role to the other (Derks & Bakker, 2010; Park et al., 2020). If such a role change occurs due to one life domain intruding into another life domain, integration enactment takes place. If such integration enactment happens, with, for example, being contacted from work outside of working hours or receiving work emails during the weekend, it can, with time, disturb recovery processes and lead to impaired detachment from work and reduced well-being (Dettmers et al., 2016b; O'Driscoll et al., 2010; Wepfer et al., 2018).

To reduce the potential risk of integration enactment, workers must understand and strengthen their personal boundaries. Training programs designed to enhance boundary management tactics (BMT; Kreiner et al., 2009) have been shown to improve boundary management, work-life balance, and well-being (Althammer et al., 2024; Rich et al., 2020). However, many times, a reason for integration enactment does not seem to be a lack of individual competencies, but more so the conflicting integration demands from work, such as the supervisors' expectations (Derks & Bakker, 2014; Koch & Binnewies, 2015; Kühner et al., 2023). Accordingly, interventions for FWD should not only target the individual's behavior but also the workplace integration demands (Hu et al., 2021; Kelloway & Barling, 2010).

Therefore, we developed an online training intervention for supervisors to strengthen their and their team members' BMT, to reduce the integration demands through the perceived supervisor and team norms and to decrease their and their team members' integration enactment. The effectiveness of this modular, self-paced E-Learning tool was tested using a longitudinal study design measuring short- and medium-term effects of the intervention.

With our study, we contribute to the boundary management literature in several ways. First, we extend the existing intervention research about minimizing integration enactment. Although it is widely accepted that integration enactment is associated with negative consequences (Derks & Bakker, 2010; Kühner et al., 2023), interventions that address this problem are largely lacking.

Second, we address the supervisors' leadership behaviors in our intervention and therefore also target the working conditions for the respective team members. This helps workers to engage in healthy or protective behaviors like switching off from work during non-work time from a different angle, namely by reducing conflicting workplace demands (Hu et al., 2021; Kühner et al., 2023). This makes our intervention a leadership development instrument from which both supervisors and their team members could benefit. (Kelloway & Barling, 2010).

Third, our intervention is to our knowledge the first to address the social norms in FWD, like for example the supervisor's availability expectations during non-work time or the role model behavior of the team, which can affect integration enactment. With this, we take boundary management interventions a step further, including an important factor accounting for integration behavior (Barber et al., 2023; Kühner et al., 2023; Park et al., 2011).

Lastly, we complement existing boundary management intervention research with a longitudinal study design consisting of one pre and three post intervention measurements at four weeks, eight weeks and six months after the intervention, to better understand the sustainability of the intended behavior changes over time. So far, most boundary management intervention studies focused on short- and medium-term effects like two to four weeks post intervention (Althammer et al., 2023; Michel et al., 2014; Rexroth et al., 2017; Rich et al., 2020) or diary studies (Althammer et al., 2021; Kushlev & Dunn, 2015), but no boundary management training effects have been analyzed up to six months after the intervention.

Theoretical Framework and Hypotheses

Boundary Management and Flexible Work Designs

Boundary management comprises all activities of an individual to create, maintain and change boundaries between different life domains (Allen et al., 2024; Ashforth et al., 2000). Boundary theory (Ashforth et al., 2000; Clark, 2000) posits that individuals differ in how they manage their work to non-work boundaries on a continuum from segmentation to integration. Segmentation refers to strong boundaries, while integration means more permeable and flexible boundaries, making role changes between the life domains easier (Ashforth et al., 2000, Clark, 2000). Integration enactment occurs when one domain intrudes into another, such as receiving a work-related phone call during the weekend. Such integration enactment can be detrimental for workers if it disturbs their recovery process (Dettmers et al., 2016a; O'Driscoll et al., 2010; Wepfer et al., 2018). Therefore, integration enactment should be kept at a manageable level. This becomes even more crucial with modern flexible work designs and the corresponding ICT use,

which make the boundaries between life domains more permeable, and thus facilitate integration enactment (Allen et al., 2021; Barber et al., 2023).

Integration enactment can be changed through individual segmentation behaviors like BMT that help maintain segmentation of life domains, as well as work characteristics like social norms through supervisors' expectations and team behaviors, that press for integration (Barber et al., 2023; Gadeyne et al., 2018; Scheibe et al., 2024). Accordingly, our intervention addresses not only integration enactment, but also social integration norms and BMT.

Integration Enactment

Integration enactment is boundary crossing behavior, initiating a role transition from one life domain to the other (Ashforth et al., 2000). We are focusing on the direction work to non-work, where role transitions often happen spontaneously, for example through receiving a message from the supervisor outside of working hours or feeling the need to address work issues despite considering the actual moment non-work time. This differentiates from doing actual mobile flexible work, which could take place on unusual times or locations but would be considered paid working time by the individual and has a characteristic of autonomy and schedule control to it (Demerouti et al., 2014; Hu et al., 2021; Kattenbach et al., 2010).

Integration enactment shows similarities with technology-assisted supplemental work (TASW), which describes supplemental work, performed at home outside of regular working hours through ICT use (Duranova & Ohly, 2016; Fenner & Renn, 2010). It is also related to the concept of extended availability, the expectation that workers should be available for work outside normal business hours (Dettmers et al., 2016a). While integration enactment as we see it summarizes all aspects of the role change independently of who initiated it, in our understanding, TASW emphasizes more the behavioral aspect of executing work outside working hours and extended availability focuses more on the cognitive and emotional aspect of being responsive to a work demand outside the work domain.

All these concepts have been associated with negative consequences. Extended availability has been linked with impaired well-being (Arlinghaus & Nachreiner, 2013; Derks & Bakker, 2014; Dettmers et al., 2016b) and increased emotional exhaustion and strain (Day et al., 2012; Dettmers, 2017); TASW has been associated to increased conflict and reduced well-being and detachment (Duranova & Ohly, 2016; Gadeyne et al., 2018; Kühner et al., 2023); and integration enactment has been linked with impaired recovery, increased exhaustion, and reduced work-life balance (Derks & Bakker, 2014; Kattenbach et al., 2010; Wepfer et al., 2018).

To our knowledge, there are so far no interventions aiming at integration enactment, extended availability or TASW. Some boundary management interventions have addressed digitalization-related stress (Kushlev & Dunn; 2015; Pfaffinger et al., 2023), schedule control (Kelly et al., 2011) or boundary control (Rich et al., 2020), but focus on more distant outcomes like stress, wellbeing or conflict.

Integration enactment is facilitated by staying connected with work after working hours, being available through multiple channels, not communicating or setting personal boundaries as well as availability expectations from supervisors and colleagues (Allen et al., 2024; Derks & Bakker, 2010; Stempel et al., 2022). Therefore, explaining these aspects to supervisors and providing recommendations to avoid integration enactment in their teams should reduce the integration enactment for the supervisors and in consequence for their team members. Based on these assumptions, we propose the following hypothesis:

Hypothesis 1: *Our intervention decreases integration enactment among a) supervisors and b) their team members at four weeks, eight weeks, and six months after the intervention, compared to a control group.*

Social Norms

Social norms refer to common standards for behavior, set by and for members of a social group (Cialdini & Trost, 1998). Descriptive social norms refer to the typical perceived behavior of a social group that serves as reference for one's own behavior (Cialdini et al., 1990). These norms do not necessarily reflect the reality, but a perception of what the group thinks and does (Cislaghi & Berkowitz, 2021). In FWD, the behavior and perceived expectations from the supervisor and work colleagues regarding integration enactment pose a strong social norm for one's own boundary management (Koch & Binnewies, 2015; Kühner et al., 2023). So, if a supervisor regularly sends emails in the evening or answers to messages during the weekend, team members may perceive that it is *normal* and expected to regularly check emails and address work matters during non-work time. Although the team members might neither have explicit orders to work outside regular hours nor know whether their supervisor is actually doing mobile-flexible or supplemental work, such a social norm can strongly influence team members' personal boundaries between work and non-work (Derks & Bakker, 2014; Park et al., 2011). In this sense, the social norm in flexible work designs represents a strong integration demand and might lead to integration enactment (Derks & Bakker, 2014; Stempel et al., 2022).

In line with this reasoning, social norms about availability expectations or working outside working hours have been associated with negative consequences. For example, work availability

expectations are linked with telepressure, the urge to stay responsive in work communication, which is associated with burnout (Barber et al., 2023). Integration norms have been linked with work-family conflict (Derks et al., 2015; Gadeyne et al., 2018; Schieman & Glavin, 2017), reduced detachment (Derks et al., 2014; Dettmers, 2017) and impaired well-being (Dettmers et al., 2016; Stempel et al., 2022).

Interventions to change the individual's behavior through changing the perceived social norms have been successful in the past. Seminal interventions feature Goldstein et al. (2008), who changed the social norm of towel reuse habits in hotel guests, and Perkins and Craig (2002), who described a reduction of drinking behavior in college students. In both cases, the intervention suggested that the majority of people behaved differently than expected. Interventions aiming at a more family-friendly or health-oriented leadership behavior have also shown to be successful (Ode-Dusseau et al., 2016; Stuber et al., 2020). However, to our knowledge, no interventions have addressed social norms regarding boundary management in FWD (Barber et al., 2023), although they have been identified as a key driver of integration enactment (Derks & Bakker, 2014; Park et al., 2011; Stempel et al., 2022).

The social norm at the workplace is strongly driven by the supervisors' behavior (Koch & Binnewies, 2015; Stempel et al., 2022). By advising the supervisors on how social norms work, encouraging them to clarify the actual social norm and to promote a healthier role model behavior, the supervisor behavior and respectively the social *supervisor norm* should change in the perception of the team members (Kelloway & Barling, 2010; Koch & Binnewies, 2015; Kühner et al., 2023). The changed supervisor norm should also lead to a changed behavior of the team, changing the social *team norm* respectively in the perception of the supervisors and the team members themselves. Based on these assumptions, we propose the following hypotheses:

Hypothesis 2: *Our intervention changes a) the supervisor norm among team members and b) the team norm among supervisors and c) their team members at four weeks, eight weeks, and six months after the intervention, compared to a control group.*

Boundary Management Tactics

BMT are idiosyncratic, dynamic, goal-oriented behaviors to segment work from private life (Ashforth et al., 2000; Cho et al., 2025; Kreiner et al., 2009). They help avoiding role blurring due to strengthened boundaries but also make transitions from one role to the other more difficult (Cho et al., 2025). They can be divided into different subtypes, for example into physical, temporal, communication and technological tactics (Cho et al., 2025). Commonly used tactics are temporal and physical, like setting dedicated times or places for work. Technological tactics

include for example setting notifications or profiles for work schedules. Communicative tactics refer to interactions with other stakeholders like managing expectations (Allen et al., 2021). BMT provide an array of possibilities to apply specific behaviors in daily routines to help set boundaries and avoid unwanted role changes (Ashforth et al., 2000). Prior to the advancements in digitalization, boundaries were mainly defined by the nature of the employment setting, with work and private life usually having separate locations, distinct equipment, and well-defined schedules. With ICT and the new work culture, BMT may help to compensate for the disappearance of such structural boundaries. For example, instead of transitioning home from the office with work being left behind, team members might want to use switching profiles or muting work notifications during non-work times when smartphones and laptops make work always available.

BMT have been linked with positive outcomes like increased detachment and reduced availability for work outside working hours (Allen et al., 2014; Kühner et al., 2023). They have shown to improve boundary management (Althammer et al., 2023), as well as satisfaction and engagement (Carlson et al., 2016). There are several interventions aiming at BMT. Michel et al. (2014) and Althammer et al. (2021) trained up workers on cognitive-emotional segmentation strategies that helped increase detachment and satisfaction and reduce work-family conflict. Rich et al. (2020) managed to improve boundary control through strengthening ICT segmentation tactics in medical personnel; and Althammer et al. (2024) increased boundary management, well-being, satisfaction and reduced emotional exhaustion in an intervention for workers in FWD using among others Kreiner et al.'s (2009) tactics.

BMT are simple behaviors that workers can individually adapt to their preferences and bring into action with immediate effects (e.g., making oneself unavailable). By explaining the importance of BMT in FWD and by providing ideas to develop and strengthen them, supervisors should be able to improve their BMT. By advising supervisors to encourage and support their team members' BMT development, these should also improve. Based on these assumptions, we propose the following hypothesis:

Hypothesis 3: *Our intervention increases boundary management tactics among a) supervisors and b) their team members at four weeks, eight weeks, and six months after the intervention, compared to a control group.*

Method

Participants

Participants of the intervention group were recruited during 12 months from spring 2022 through our homepage, social media (e.g., LinkedIn), and private and professional networks. The initial goal was to collect data from both supervisors and their respective team members. However, due to slow recruitment, we later extended participation to supervisors without requiring the inclusion of their team members. Supervisors completed both the four-wave longitudinal survey and the online intervention, whereas their team members participated only in the surveys. All participants received the invitations to fill out the surveys via email. After filling out the pre-intervention survey (wave 1), supervisors received the log-in credentials for the online E-Learning intervention within a week. They were advised to go through one module per week, however there were no restrictions made regarding the timing or frequency of access. Post-intervention survey invitations were sent out at four weeks (wave 2), eight weeks (wave 3) and six months (wave 4) after completing the last E-Learning module.

In total, 61 supervisors took part in the intervention (38 without and 23 with their team members), yielding data from 192 team members (average team size = 7.0, range: 2-19). A total of 53 supervisors completed the E-Learning and were included in the three post-intervention surveys, along with 155 team members. From these 208 participants, 128 completed wave 2, 119 completed wave 3, and 118 completed wave 4. Participants came from a wide range of different small to large-sized companies in Switzerland operating in various sectors. The sample was overall well balanced in terms of age and gender, with a slightly higher proportion of men (62%) among supervisors and women (55%) among team members. A total of 76% lived with at least one other adult in the same household, and 40% lived with one or more children. Supervisors were predominantly highly educated (74%), whereas the majority of team members had completed secondary education (55%). Most participants worked at a high employment rate (supervisors $M = 93%$, $SD = 13.8$; team members $M = 87%$; $SD = 17.9$; with 100% corresponding to a 42-hour work week in most organizations).

Participants of the control group were recruited via a professional online panel provider that supports academic and commercial survey research across Europe. From the original 792 participants who had participated in the initial assessment, 526 participants completed wave 2, 569 completed wave 3 and 378 completed wave 4. The majority of participants did not hold a leadership role (65%). Again, in this sample most supervisors were male (73%), whereas employees without managerial responsibilities were balanced with regard to gender (51%). A

total of 76% lived with at least one other adult in the same household, and 36% with at least one child. Supervisors were predominantly highly educated (55%), while most employees without managerial responsibilities had secondary education as highest level of education (67%). Most participants were working at a high employment rate (supervisors $M = 92\%$, $SD = 16.0$; employees $M = 79\%$; $SD = 26.0$).

Participants from the intervention group did significantly differ from participants of the control group with regard to a higher employment rate ($t(423.79) = 3.03$, $p < .01$), higher proportion of males ($\chi^2(2, 989) = 7.91$, $p < .05$), and higher proportion of individuals with secondary education as highest level of education ($\chi^2(1, 1000) = 9.00$, $p < .01$).

Intervention

The E-Learning consisted of four learning modules and one module with additional information, references, a summary, and a presentation to be shared with the respective teams. It was designed following the *train-the-trainer* principle (Lang et al., 2017; Orfaly et al., 2005), with only the supervisors doing the training, but the whole team potentially benefiting from the contents. Each learning module consisted of an introduction or repetition, an educational part, practical tips, examples, quizzes, and a summary, presented in multimodal formats like texts, graphics, videos, and audios. Each module included tasks or tests on worksheets that the supervisors were encouraged to complete together with their teams.

Modul 1: Boundaries between work and private life in the digital transformation. In this module, participants learned how digitalization is changing ICT use and work culture, and how these shifts can blur the boundaries between life domains. Boundary management and boundary preferences were explained, along with the benefits of using boundary management tactics to keep segmentation where needed.

Modul 2: Implementing boundary management with health-oriented leadership. Supervisors were shown how health-oriented leadership can support their team members with unwanted integration enactment in the digitalization. They learned about their impact of being a role model and how their behavior might set social norms for their team members. The module also explained how to change team social norms toward healthier ones.

Modul 3: Supporting work-life balance. Supervisors were introduced to the different types of demands their team members may face when working in FWD and learned how they provide emotional, instrumental, and technical support to lead their team members in a positive and sustainable way.

Modul 4: Autonomy as key to successful boundary management. In this module, supervisors were guided how to implement an autonomy supporting leadership style that allows team members to implement a beneficial FWD, providing them flexibility and control over their work schedule by minimizing unwanted integration enactment.

Participants took on average 14.2 minutes to complete a module and 16.3 days to complete the whole E-Learning program.

Measures

Participants were instructed to rate each statement according to their personal agreement from 1 (*strongly disagree*) to 5 (*strongly agree*) and to focus on the team they are leading (supervisors) or the team they are a member of (team members).

Integration Enactment

Integration enactment was measured with a newly constructed scale based on previous studies about TASW (Fenner & Renn, 2010) and extended availability (Dettmers et al., 2016a). The six items were “In my free time / outside my working hours...” followed by “I am reachable for work matters”, “work colleagues can contact me”, “I am available for work matters”, “I regularly handle open work tasks”, “I take care of work matters”, “I work regularly”. Cronbach’s Alpha ranged between .89 and .92 for supervisors and .87 and .90 for team members across all four measurement waves (see Table 1).

Social Norms

Social norms were measured with a newly constructed scale based on previous studies about work demands due to supervisor expectations and ICT behavior (Dettmers et al., 2016a; Derks & Bakker, 2014). We split the scale in team norm and supervisor norm subscales, to differentiate the source of the social norm. Each subscale consists of three items. Items for team norm were “most of our team members answer work messages also in their free time”, “my work colleagues send work mails also outside their working hours” and “my work colleagues regularly process work tasks outside their working hours”. Items for supervisor norm were “my supervisor is usually available for work matters also outside working hours”, “my supervisor answers work messages also in their free time” and “my supervisor handles work tasks regularly outside their working hours”. For team norm, Cronbach’s Alpha ranged between .89 and .92 for supervisors and .87 and .90 for team members across all four measurement waves and for supervisor norm, Cronbach’s Alpha ranged from .85 to .87 for team members (see Table 1).

Boundary Management Tactics

Boundary management tactics were measured with the scale from Cho et al. (2025). Sample items include “I created a symbolic distance between my work and private life, e.g., by keeping separate calendars, separating my work and home keys, or keeping work-related objects away from home” for physical, “I set specific hours for my work and personal life, e.g., by scheduling my time so that I have adequate time for both work tasks and personal matters” for temporal, “I communicated my needs regarding my work and private life to my superior, e.g., by talking about my private commitments or activities and explaining what they require” for communication and “I did not access work-related information and communication technology in my free time, e.g., by not reading work-related messages or by avoiding contacting colleagues for work-related issues” for technological tactics. Cronbach’s Alpha ranged between .79 and .84 for supervisors and .79 and .80 for team members across all four measurement waves (see Table 1).

Statistical Analyses

Data and the analysis code can be found at the OSF (<https://osf.io/28wsh/>). First, we tested the factor structure and internal reliability of our variables with a series of confirmatory factor analyses (CFA) using R. The model fit was assessed by the comparative fit index (CFI), the Tucker–Lewis index (TLI), the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) (Hu & Bentler, 2009). While CFI and TLI values of 0.95 or higher indicate a good fit, RMSEA and SRMR values should be 0.06 or lower (Hu & Bentler, 1999). Factor loadings above 0.7 indicate a reliable factor structure which is necessary for a stable model. Due to the longitudinal design of our study, we investigated measurement invariance for all variables across the measurement waves to ensure the interpretation of our variables remained the same throughout the study (Mackinnon et al., 2022). We compared increasingly restrained models (configural, metric, and scalar) by chi-square difference tests to identify a significant decrease in model fit. To test our hypotheses, we used multilevel analyses, as recommended by Lischetzke et al. (2015) for the examination of the intervention effectiveness. We specified the analyses models in R to examine changes in integration enactment, social norms and BMT over time (baseline at wave 1 vs. four weeks, eight weeks and six months post intervention) and whether these changes differed between the intervention groups and the control groups (wave x group interaction effects). We analyzed supervisors and team members separately against the individuals of the control group with the same leadership status.

Table 1 Means, Standard Deviations, and Correlations of the Measures

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. IE 1	2.86	0.99	(.89)																
2. IE 2	2.81	1.01	.72**	(.91)															
3. IE 3	2.84	1.00	.72**	.70**	(.91)														
4. IE 4	2.81	1.02	.70**	.69**	.75**	(.91)													
5. TN 1	2.82	1.05	.50**	.46**	.46**	.41**	(.88)												
6. TN 2	2.82	1.05	.39**	.51**	.45**	.47**	.59**	(.90)											
7. TN 3	2.80	1.06	.42**	.43**	.56**	.47**	.64**	.64**	(.91)										
8. TN 4	2.78	1.03	.39**	.42**	.41**	.54**	.56**	.61**	.63**	(.90)									
9. SN 1	3.50	0.96	.26**	.23**	.21**	.18**	.34**	.24**	.29**	.23**	(.85)								
10. SN 1	3.44	0.98	.20**	.25**	.17**	.23**	.23**	.31**	.22**	.29**	.55**	(.87)							
11. SN 1	3.38	0.98	.21**	.20**	.26**	.22**	.29**	.32**	.42**	.31**	.57**	.64**	(.87)						
12. SN 1	3.33	0.95	.22**	.26**	.25**	.29**	.28**	.32**	.29**	.43**	.47**	.56**	.57**	(.87)					
13. BMT 1	3.60	0.73	-.33**	-.36**	-.40**	-.40**	-.19**	-.21**	-.21**	-.26**	.05	-.00	-.02	-.08	(.80)				
14. BMT 2	3.59	0.71	-.34**	-.39**	-.40**	-.38**	-.25**	-.26**	-.27**	-.26**	.01	.06	.00	-.06	.68**	(.80)			
15. BMT 3	3.60	0.71	-.33**	-.41**	-.38**	-.40**	-.24**	-.28**	-.24**	-.24**	.01	-.01	.02	-.10*	.68**	.73**	(.82)		
16. BMT 4	3.62	0.69	-.34**	-.37**	-.38**	-.38**	-.25**	-.25**	-.25**	-.22**	-.04	-.02	-.05	-.01	.64**	.70**	.68**	(.80)	
17. Team member status	0.33	0.47	.22**	.17**	.22**	.23**	.08*	.03	.07	.05	.05	.02	.06	.14**	-.09**	-.09*	-.14**	-.11*	(-)
18. Group	0.79	0.41	.22**	.17**	.19**	.20**	.17**	.19**	.16**	.18**	.04	.13**	.18**	.21**	-.02	-.03	-.01	-.03	.08*

Note. Descriptives, intercorrelations and Cronbach's alpha for and between 1 – 16. IG = intervention group, CG = control group. The variables “team member status” and “group” were coded as binary variables

(team member status; 0 = team member, 1 = supervisor; group: 0 = IG, 1 = CG), Cronbach α reliabilities are provided on the diagonal in brackets. IE = integration enactment, TN = team norm, SN = supervisor norm, BMT = boundary management tactics. 1–4 = wave 1 to wave 4.

* indicates $p < .05$. ** indicates $p < .01$

Results

Confirmatory factor analyses were carried out for our outcome measures, namely integration enactment, social norms, and BMT. For all outcomes, the model fits and factor structures showed good results with CFI and TLI over 0.996 and RMSEA and SRMR of 0.068 or smaller (Table 2). All factor loadings were over .79 for integration enactment, .84 for social norms and .90 for BMT indicating a strong and reliable factor structure.

Table 2 *Multilevel Confirmatory Factor Analyses for our Measures*

Model per variable	χ^2	df	CFI	TLI	RMSEA	SRMR
Integration enactment	111.03	8	1	0.999	0.068	0.032
Social norms	106.68	8	0.999	0.998	0.068	0.036
BMT	67.67	14	0.998	0.996	0.037	0.022

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual.

The measurement invariance reached scalar level for BMT and team norm, confirming that participants interpreted our variables consistently throughout the four waves of our study. Supervisor norm and integration enactment only reached metric level, however, fit indices indicated a good model fit (CFI = 0.99 – 1, TLI = 0.98 – 1, RMSEA = 0 - .03, SRMR = .02 - .04) (Table 3). Measurement invariance results by group can be found in Supplemental Materials S1.

Table 3 *Measurement Invariance for our Measures*

Model per variable	χ^2	df	CFI	TLI	RMSEA	SRMR	Pr(>Chisq)
Integration enactment							
Configural	352.55	188	0.99	0.99	0.03	0.04	-
Metric	361.54	206	0.99	0.99	0.03	0.04	.87
Scalar	402.55	224	0.99	0.99	0.03	0.04	.00
Team norm							
Configural	39.43	30	1	1	0.02	0.02	-
Metric	42.67	39	1	1	0.01	0.03	.90
Scalar	45.94	48	1	1	0	0.03	.95
Supervisor norm							
Configural	29.04	30	1	1	0	0.02	-
Metric	41.94	39	1	1	0.01	0.03	.11
Scalar	60.97	105	1	1	0.02	0.04	.02
BMT							
Configural	433.61	296	0.99	0.98	0.02	0.03	-
Metric	454.91	320	0.99	0.98	0.02	0.04	.68
Scalar	489.82	344	0.99	0.98	0.02	0.04	.06

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual.

Effectiveness of the Intervention

Results from the multilevel analyses of the outcomes are presented in Table 4. The intercept represents the estimated mean of the supervisors and team members of the respective outcome at baseline before the intervention (wave 1). Waves 2, 3 and 4 show the estimated changes from wave 1 at four weeks, eight weeks and six months after the intervention. Group indicates differences of the intervention group and the respective control group at baseline. The interactions between measurement waves and control group (wave 2 x group, wave 3 x group, wave 4 x group) show the changes in the outcomes between intervention group and the control group at the respective measurement time. Significant interaction effects of group over measurement waves are displayed in Figure 1, other interaction effects can be found in Supplemental Materials S2.

Contrary to Hypotheses 1a and 1b, supervisors and team members did not report significantly less integration enactment four weeks, eight weeks or six months after the intervention compared to the control group. Although supervisors showed a significant reduction between pre-intervention and six months later (-0.20), the change was not significantly greater than the change in the control group. Contrary to Hypothesis 2a, team members did not show a significant change in supervisor norm after the intervention compared to the control group. Although it decreased significantly six months after the intervention (-0.32), the change was not significantly different to the control group. In line with Hypothesis 2b, supervisors reported a significant decrease in team norm at four weeks (-0.28) and eight weeks (-0.29) post-intervention which was significant compared to the control group. Contrary to Hypothesis 2c, team members did not report a significant change in team norm. In line with Hypothesis 3a, supervisors reported a significant increase in BMT at all measurement points after the intervention, which remained significant at four weeks (-0.25) and eight weeks (-0.28) post-intervention compared to the control group. Contrary to Hypothesis 3c there was no significant change in BMT for team members.

Table 4 Results of the Multilevel Analyses for Outcomes for Supervisors and Team Members, Intervention Groups Versus Control Groups

Integration Enactment				
	Supervisors		Team members	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Wave 1	2.82*	.12	2.27*	.07
Wave 2	-0.07	.09	0.02	.07
Wave 3	-0.15	.09	0.05	.07
Wave 4	-0.20*	.09	0.09	.07
Group	0.42*	.13	0.55*	.14
Wave 2 x Group	-0.04	.11	-0.05	.11
Wave 3 x Group	0.15	.11	-0.09	.11
Wave 4 x Group	0.17	.11	-0.14	.11

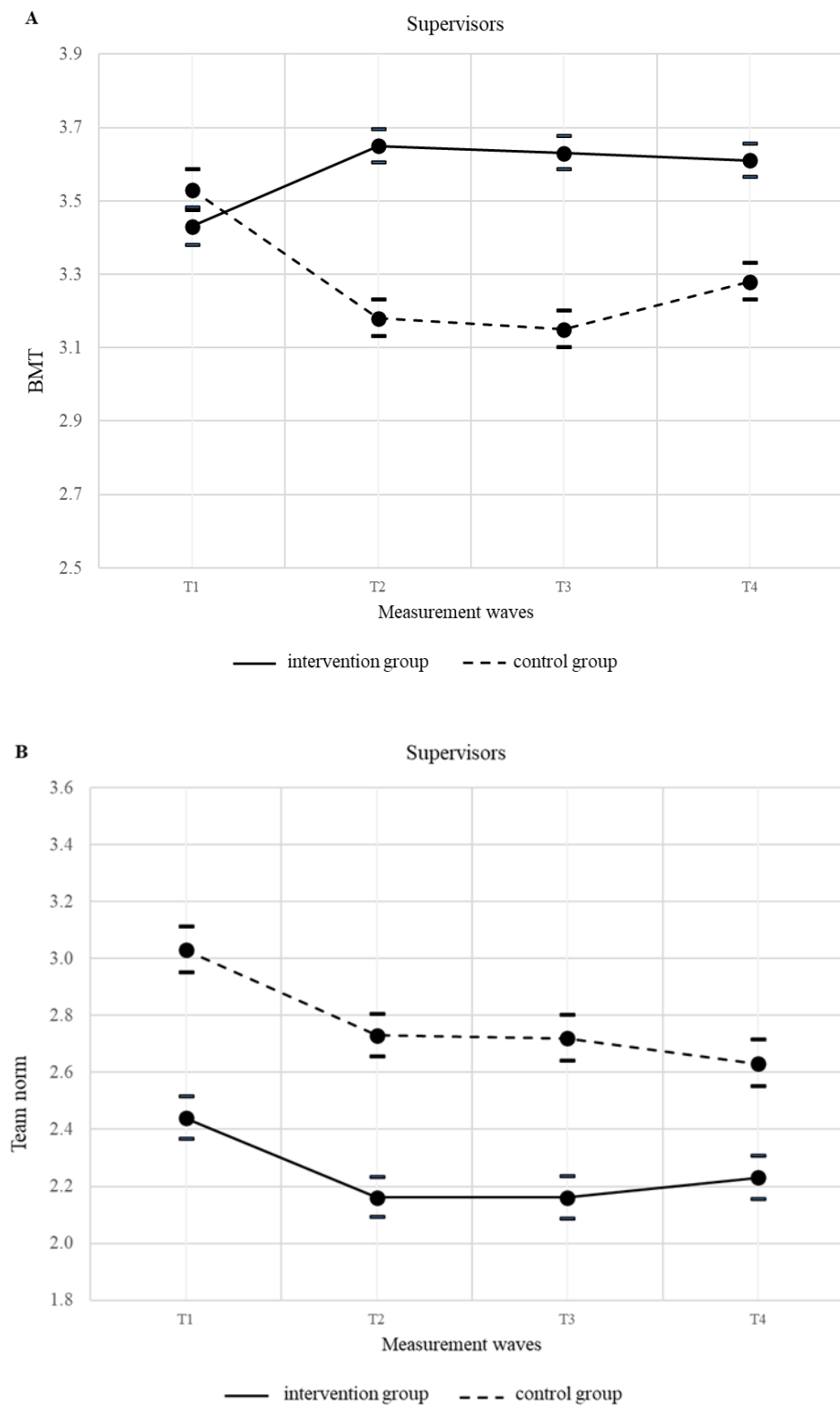
Supervisor norm			Team members	
			<i>B</i>	<i>SE</i>
Wave 1			3.10*	.14
Wave 2			-0.19	.15
Wave 3			-0.24	.15
Wave 4			-0.32*	.14
Group			0.38*	.16
Wave 2 x Group			0.21	.17
Wave 3 x Group			0.21	.18
Wave 4 x Group			0.21	.17

Teaen norm				
	Supervisors		Team members	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Wave 1	2.44*	.15	2.49*	.08
Wave 2	-0.28*	.14	0.05	.09
Wave 3	-0.28*	.15	-0.01	.09
Wave 4	-0.21	.15	0.04	.10
Group	0.59*	.16	0.35*	.10
Wave 2 x Group	0.29*	.15	-0.03	.10
Wave 3 x Group	0.28*	.16	0.02	.11
Wave 4 x Group	0.19	.17	-0.05	.11

BMT				
	Supervisors		Team members	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Wave 1	3.43*	.10	3.71*	.06
Wave 2	0.22*	.09	0.01	.06
Wave 3	0.20*	.09	0.05	.06
Wave 4	0.18*	.09	0.06	.06
Group	0.10	.11	-0.09	.07
Wave 2 x Group	-0.25*	.10	-0.01	.07
Wave 3 x Group	-0.28*	.10	-0.02	.07
Wave 4 x Group	-0.15	.10	0.00	.07

Note. N = 53 supervisors (intervention group), N = 275 supervisors (control group), N = 155 team members (intervention group) and N = 517 employees (control group). Wave 1: intercept, pre-Intervention, wave 2: four weeks post intervention, wave 3: eight weeks post intervention, wave 4: six months post intervention; Group = intervention group (0) or control group (1); wave 1: B = estimated mean; wave 2 to wave 4: B = estimated change from wave 1; * significant ($p < .05$).

Figure 1 Significant Results for Supervisors of BMT and Team Norm Compared to the Control Group Over Time



Note. A = BMT, B = Team norm. T1–T4 = measurement waves (T1 = baseline before the intervention, T2 = four weeks, T3 = 8 weeks, T4 = 6 months post intervention). Dots show mean values. Bars show standard errors.

Discussion

The digitalization increases the possibilities and the use of FWD (Allen et al., 2024). By this, the boundaries between work and private life domains become more permeable and countermeasures to keep them segmented when needed or desired are of great value. This can be achieved by reducing integration demands like social norms, by building the capability to use individual BMT or by reducing integration enactment behavior. We developed and carried out a self-study E-Learning for supervisors in four modules containing educational information, practical examples and exercises to teach supervisors about the effects of the digitalization on the boundaries between work and private life.

The results show that the intervention improved supervisors' boundary management tactics and changed the perception of the supervisor's team norm after completion of the E-Learning program. These effects remained significant when compared to a control group. No significant effects were found among the team members after the intervention compared to a control group, raising the question of whether and how interventions targeting supervisors may affect their team members.

Theoretical Contributions

With this intervention, we contribute to the existing research by showing boundary management tactics can be improved after supervisors learned about physical, temporal, communication and technological tactics and developed individual strategies. Our results confirm previous studies that successfully strengthened BMT in workers (Althammer et al., 2024; Michel et al., 2014; Rexroth et al., 2017; Rich et al., 2020). This is in line with the approach that BMT are idiosyncratic, flexible and dynamic behaviors that can be used in an adaptive way depending on the work-family situation (Cho et al., 2025). Particularly since digital work settings remove structural barriers that keep work and private life segmented like work equipment or processes tied to distinct places, it is necessary to enable options to achieve segmentation when needed. For example, using different profiles on the private phone grants access to work communication at any time when needed, however, it makes unsolicited interruptions during non-work time much less likely.

We did not see changes in BMT in the supervisors' team members despite the aimed train-the-trainer principle (Lang et al., 2017; Orfaly et al., 2005). Ideally, an intervention addressing supervisors cascades to their team members (Julien et al., 2011; Kelloway & Barling, 2010). In the case of BMT, this might be explained by the nature of BMT being idiosyncratic behaviors that

cannot easily be transposed to somebody in a different work-life situation (Carlson et al., 2016; Cho et al., 2025; Scheibe et al., 2024). For example, a supervisor might choose to use a physical BMT by setting up a separate office to work from home, which might not be a possible strategy to recommend to their team member who does not have a spare room.

Furthermore, our results show that social norms regarding integration enactment can be transformed through an intervention. After learning about the impact of the digitalization and healthy boundary management, as well as the influence of their own role model behavior in the E-Learning, supervisors perceived their teams less involved in integration enactment behaviors. This might be due to the team members effectively reducing integration enactment behavior, despite themselves not reporting it (the team members' integration enactment did not change). On the contrary, supervisors might have been affected by the *expectation bias*, when the perception of one's own or others' behavior is affected by expectations about an outcome (Williams et al., 2012). Since the supervisors participated in the E-Learning it is likely that they expected the integration enactment behavior in the team to change. Independently of the cause, social norms can be important working conditions that affect the behavior of individuals particularly in the context of FWD (Derks & Bakker, 2014; Park et al., 2011; Stempel et al., 2022). With this, we are among the first to transfer intervention research about successful social norm changes (Goldstein et al., 2008; Perkins & Craig, 2002) to boundary management in FWD. An intervention targeting not only the work behavior but also the work environment might increase the potential success of workplace interventions, since positive changes by the individual might be less likely to be attenuated by the expected team behavior. So, for example, when a participant learned to switch off work notifications during the weekend, they might be more likely to keep them switched off if they expect their peers to do the same.

Lastly, we found some interesting, yet not reliable, indications in our results. We found that the team members' perception of the supervisor norm changed significantly at six months after the intervention. Although this change did not differ from the control group it is possible that the team members did perceive a change in their supervisors through our intervention. We also observed significant changes in the supervisor's integration enactment at six months after the intervention, however not different from the control group. These findings provide encouraging indications for future developments to further address integration enactment through interventions. The delayed observations in these findings might be due to preceding processes like the supervisors' implementation of BMT, social norm changes and opportunities for their team members to observe and re-evaluate their supervisors' behaviors. Consequently, more robust effects might have shown later, outside our study design. This interpretation would be in

line with the multifactorial character of TASW antecedents, which can be located in the work context, work characteristics and non-work characteristics (Kühner et al., 2023). The fact that no changes in integration enactment were observed at team member level might be due to FWD being rather individual arrangements determined not only by work characteristics but the personal situation and preferences. Potentially, team members would have shown different results when participating directly in the intervention. In general, a better understanding of how to design supervisor interventions aiming also at their team members is needed to promote cascading effects.

Limitations and Implications for Future Research

The first limitation of our intervention study was the limited number of participants. With 53 participants in our E-Learning, we are close to the recommended lower boundary for reliable results in multilevel model analysis (Maas & Hox, 2005). Moreover, the statistical power might only have been sufficient to detect medium to large size effects which might have limited our results (Mathieu et al., 2012). A future repetition of the intervention ideally with more participants might yield greater clarity regarding the reliability of our findings.

Furthermore, although our study was conducted over an extended period of time some effects of the intervention only became apparent after six months, indicating a multistep process. Particularly for intervention studies targeting supervisors and effects cascading to team member level, the impact process needs to be considered with a potentially adjusted study design.

Besides BMT and social norms, there might be other mechanisms that impact integration enactment behaviors. For example, workload, work and non-work characteristics, organizational norms, and individual factors like preferences have been linked to integration enactment behaviors as well (Cooper & Lu, 2019; Gadeyne et al., 2018; Kühner et al., 2023). A preference for integration might influence how participants are willing to change. If a team member has a positive attitude toward frequent role changes between work and private life, they might not perceive a supervisor norm as stressful as others, might not use BMT as much or they might even be more proficient in using them already. Future research might take this into account by including and controlling for other variables like working conditions and personal attributes.

In our study, we found indications that BMT can change in the short term whereas social norms and eventually integration enactment tend to follow at a later stage. However, the order of the effects could also be different. BMT could be a consequence of integration enactment behavior, since they serve as coping mechanisms to preserve resources after integration enactment

threatened the loss of personal resources like recovery time or sense of control (Hobfoll, 1989). The same considerations apply to social norms. They must be existent in order to influence behaviors like integration enactment; however, they only arise due to some integration behaviors that can be observed by the group (Cialdini et al., 1990; Cislighi & Berkowitz, 2021). It would be interesting to further investigate the emergence and formation of social norms in FWD suspecting a sort of reciprocal relationship.

Lastly, we used self-developed measures for integration enactment and social norms. Although factor analyses showed good results, new scales carry risks concerning reliability and validity that make it more difficult to replicate and compare the results to existing research (Clark & Watson, 2019). Therefore, future research including these or similar measures might add more clarity about our constructs and findings.

Practical Implications

E-Learning interventions are a cost-efficient and flexible way to train supervisors, especially in FWD. Our online intervention has received high evaluation ratings from the participants that prove that it was largely accepted, which provides a solid foundation for achieving learning effects. Since FWD bring changes to the boundaries between work and private life, an online intervention at organizational level could provide an impactful support measure when offering FWD.

Our E-Learning addressed the social norms in the team, which provides a promising approach for designing interventions. Social norms, like the supervisor's expectations have an important impact on the behavior of the team members but might not always be in line with the targeted outcome (Koch & Binnewies, 2015; Kühner et al., 2023). Interventions only addressing the team member's behavior might underestimate the undermining effect contrary supervisor expectations might have. For example, directly drawing on Goldstein et al.'s (2008) social norm intervention, a supervisor stating "on average, your colleagues reply less often during their private time to work messages than you" might support team members in setting healthy boundaries.

Another aspect regarding the supervisor's impact is role model learning. The supervisor behavior influences the team members also through the mechanism of role model learning, meaning exemplifying behavior, that the team members can adapt (Bandura, 1977). They can provide information and a sense of justification due to the superior role and therefore serve as examples. For instance, when a supervisor adds a notification in their email response that they are absent on Fridays and therefore not replying, it might impact the social norm, that it is acceptable to not

reply to emails within a day, but it also provides information about an acceptable procedure to communicate an absence. So far, supervisor role model behavior is used to describe both mechanisms, social learning and setting social norms (Hammer et al., 2007; Kelloway & Barling, 2010; Koch & Binnewies, 2015). Additionally, supervisors can apply leadership competencies like offering support for technical issues or adjusted performance assessment when working in FWD. In summary, targeting supervisors in interventions might have a triple beneficial effect: social norms and therefore working conditions, role model learning through exemplifying behaviors and improved leadership competencies like support and control processes. This illustrates the significance of leadership training particularly in the context of FDW.

Conclusion

In order to counteract the blurring of the boundaries between work and private life in FWD, we have designed and carried out a self-study E-Learning for supervisors to improve their and their team member's boundary management. We were able to show that supervisors' team norm and BMT changed at four and eight weeks after the intervention compared to a control group, confirming that boundary management interventions work. Supervisors' integration enactment only changed at six months post intervention and was not significantly different from the control group. The supervisor norm among the team members changed at six months post intervention, however the effect was also not significantly different to the control group. We did not find any effects on team member level; however, changes might have emerged at a later stage due to a suspected multi-step process. The digitalization removes natural segmentation structures due to FWD and the new work culture, making workers exposed to possible integration enactment at a much larger scale. However, there are ways to counteract those integration demands by training up on BMT when boundaries between work and private life seems beneficial. Moreover, targeting supervisors in workplace interventions promises a triple beneficial measure for workplace health management.

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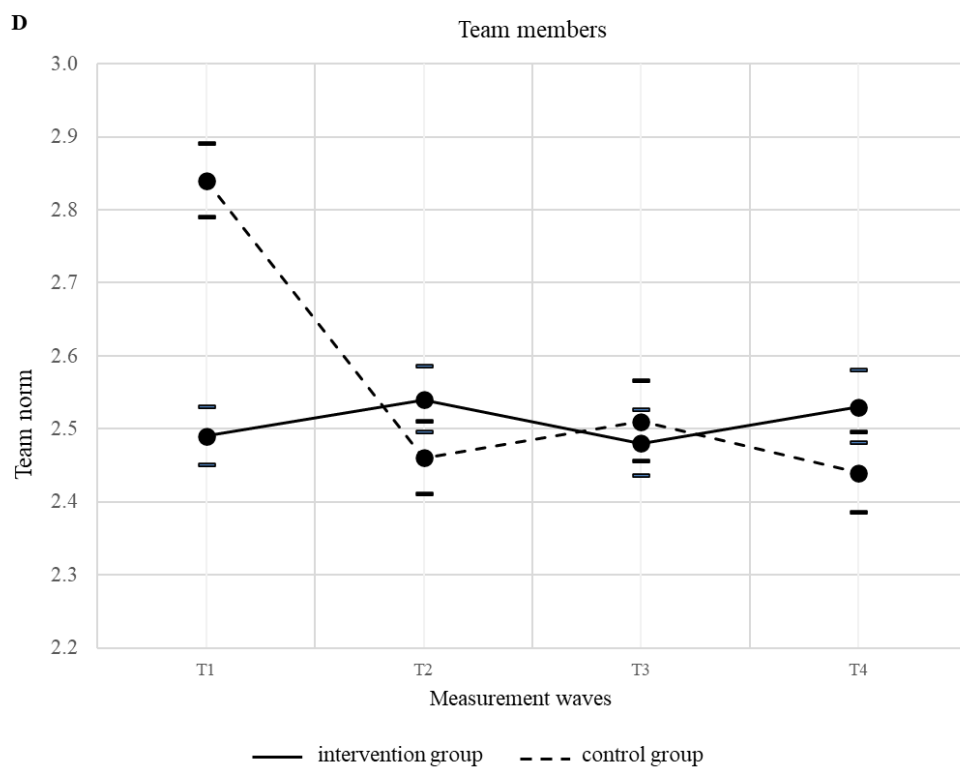
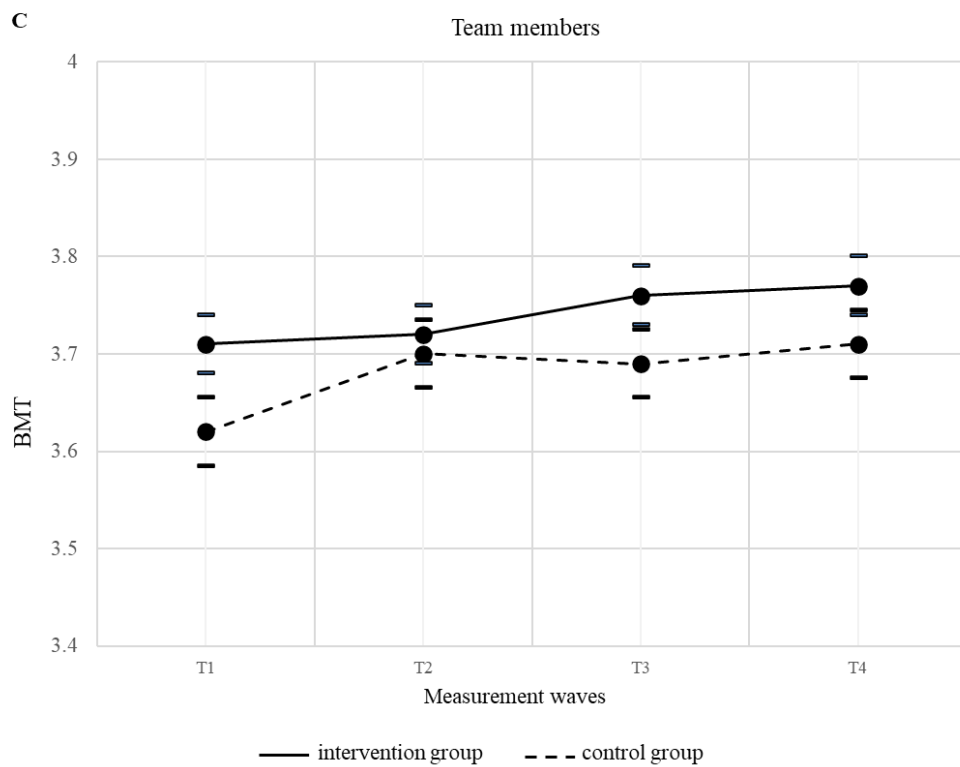
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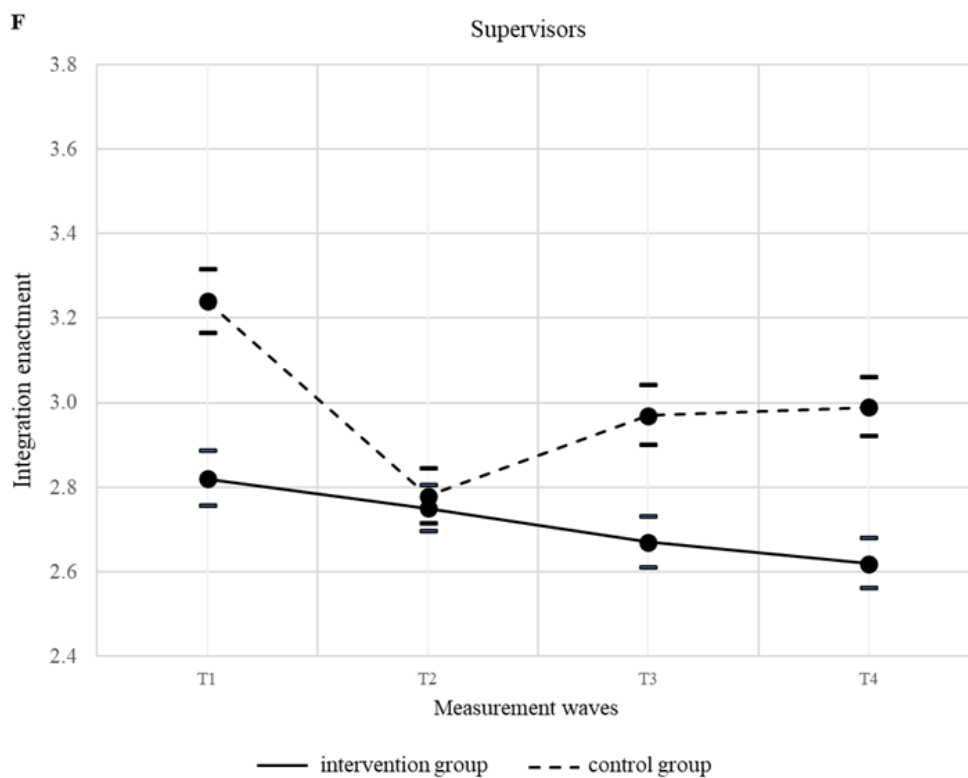
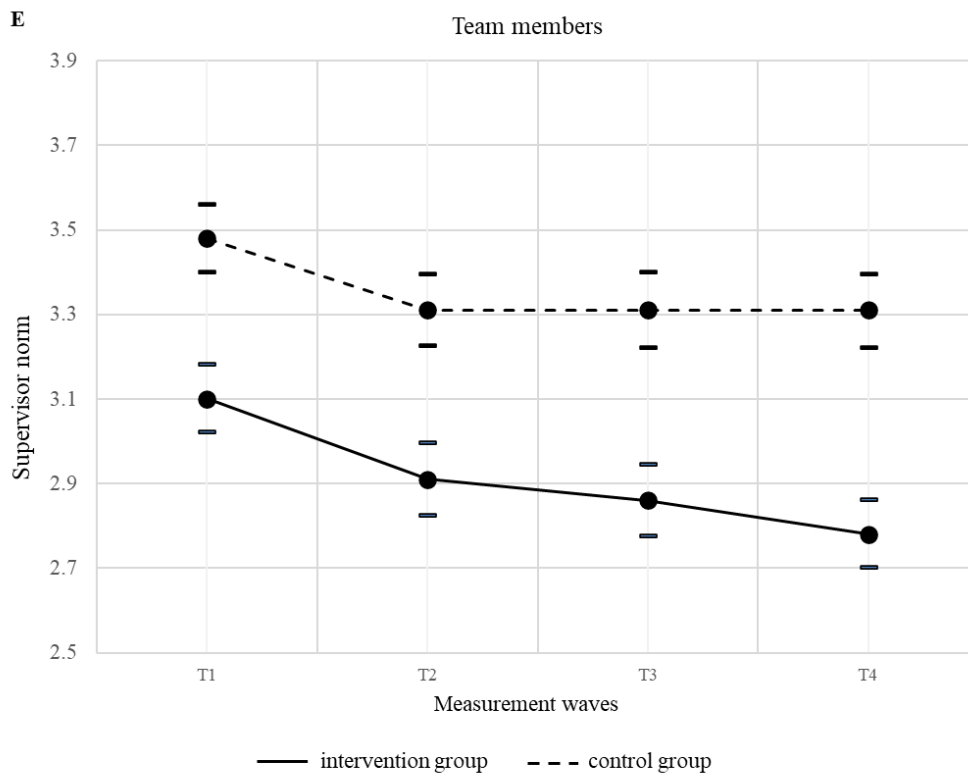
S1. Fit of Models and Measurement Invariance (Comparison by Group, Over Time)

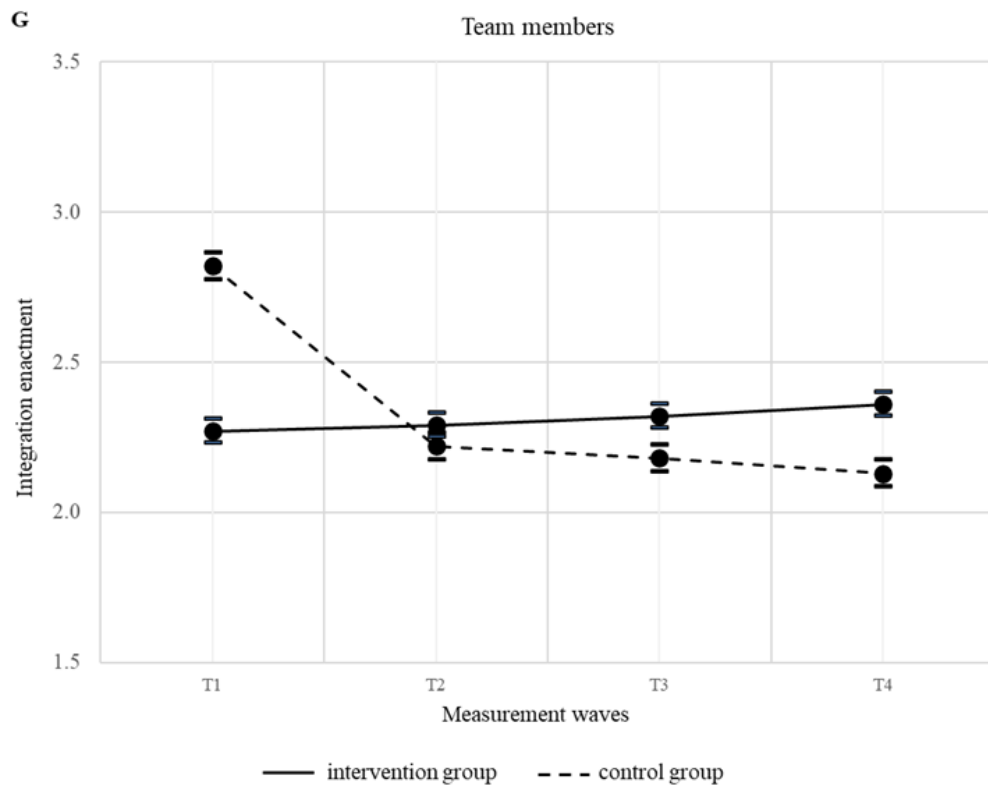
Group	Model	χ^2	df	CFI	TLI	RMSEA	[90% CI]	AIC	BIC	
Integration enactment										
CG	1. Configural invariance	339.72	188	0.99	0.98	0.03	0.03 0.04	32150.63	32786.37	
	2. Metric invariance	347.21	206	0.99	0.99	0.03	0.02 0.04	32122.12	32673.71	
	3. Scalar invariance	382.16	224	0.99	0.98	0.03	0.03 0.04	32121.06	32588.52	
IG	1. Configural invariance	258.36	188	0.98	0.97	0.04	0.03 0.06	7260.77	7713.36	
	2. Metric invariance	274.77	206	0.98	0.97	0.04	0.03 0.05	7241.18	7633.87	
	3. Scalar invariance	296.4	224	0.98	0.97	0.04	0.03 0.05	7226.82	7559.61	
Social team norm										
CG	1. Configural invariance	31.82	30	1	1	0.01	0 0.04	10813.67	11068.55	
	2. Metric invariance	35.61	39	1	1	0	0 0.03	10799.45	11016.1	
	3. Scalar invariance	36.51	48	1	1	0	0 0.01	10782.36	10960.77	
IG	1. Configural invariance	29.55	30	1	1	0	0 0.06	2596.87	2778.69	
	2. Metric invariance	38.91	39	1	1	0	0 0.06	2588.22	2742.77	
	3. Scalar invariance	47.16	48	1	1	0	0 0.05	2578.48	2705.76	
Social supervisor norm										
CG	1. Configural invariance	30.52	30	1	1	0.01	0 0.03	10646.36	10901.25	
	2. Metric invariance	41.48	39	1	1	0.01	0 0.03	10639.33	10855.98	
	3. Scalar invariance	53.29	48	1	1	0.02	0 0.03	10633.13	10811.55	
IG	1. Configural invariance	92.54	30	0.87	0.7	0.15	0.11 0.18	1503.68	1658.78	
	2. Metric invariance	110.81	39	0.85	0.74	0.14	0.11 0.17	1503.95	1635.78	
	3. Scalar invariance	122.55	48	0.84	0.78	0.13	0.1 0.15	1497.68	1606.25	
BMT										
CG	1. Configural invariance	425.74	296	0.98	0.97	0.02	0.02 0.03	46871.35	48105.44	
	2. Metric invariance	444.96	320	0.98	0.98	0.02	0.02 0.03	46842.57	47964.47	
	3. Scalar invariance	486	344	0.98	0.97	0.02	0.02 0.03	46835.61	47845.31	
IG	1. Configural invariance	370.69	296	0.97	0.95	0.04	0.02 0.05	11965.14	12843.7	
	2. Metric invariance	395.93	320	0.97	0.95	0.03	0.02 0.05	11942.37	12741.06	
	3. Scalar invariance	422.71	344	0.97	0.95	0.03	0.02 0.04	11921.15	12639.97	

Note. Abbreviations: AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; CFI = Comparative Fit Index; CI = Confidence Interval; CG = control group; df = degrees of freedom; IG = intervention group; RMSEA = Root Mean Square Error of Approximation; TLI = Tucker-Lewis Index; χ^2 = chi-square. * $p < .05$.

S2. Non-significant Results for Supervisors and Employees for BMT, Team Norm, Supervisor Norm and Integration Enactment Compared to the Control Group Over Time







Note. C = BMT, D = team norm, E = supervisor norm, F, G = integration enactment. T1–T4 = measurement waves (T1 = baseline before the intervention, T2 = four weeks, T3 = 8 weeks, T4 = 6 months post intervention). Dots show mean values. Bars show standard errors.

7.3 Research Paper 3: Working Remotely When the Boss is not: Impact of Supervisor Remote Work Intensity on Remotely Working Employee's Performance and WF Conflict

Abstract

Working remotely has become a widespread working condition providing more options for employees but generating additional work for supervisors. Whether employees benefit from working remotely is largely dependent on their supervisor's behaviors. Similarity between supervisors and their subordinates concerning their remote work intensity (RWI) should foster shared experiences and positively influence the employees' remote work experience which might have a positive impact on performance and WF conflict. We analyzed the relationship of personal RWI and task and contextual performance as well as time-based and strain-based WF conflict of remotely working employees ($N = 512$). Further, we investigated if their supervisors' RWI ($N=74$) moderated these relationships. Results showed no significant association between personal RWI and performance. We did find personal RWI to be linked with increased time-based WF conflict and supervisor RWI to be linked with increased employee performance in the supervisor report. No moderations were found. This study adds to the remote work research investigating the supervisor's role in their subordinates' remote work experience and discusses the extent and the direction of the present relationships.

Keywords: remote work intensity, task and contextual performance, time-based and strain-based WF conflict, leadership, supervisor support.

Working Remotely When the Boss is not: Impact of Supervisor Remote Work Intensity on Remotely Working Employee's Performance and WF Conflict

Working remotely has become a standard working condition for many employees in the digitized world. Since the pandemic, the percentage of the labor force working at least partly from home has stabilized at around 37% in Switzerland (Bundesamt für Statistik, 2024).

Offering the opportunity to work remotely is considered an employment benefit and helps attract and retain talent (Allen et al., 2024; Gajendran et al., 2024; Lee, 2023). Organizations with remote work arrangements report increased organizational performance, higher commitment and reduced absenteeism as well as turnover intentions (Gajendran et al., 2024; Mutiganda et al., 2022; Park & Cho, 2022; Shifrin, 2021). Employees benefit from the option to work remotely as well. They show increased satisfaction, performance, physical health and reduced work-family (WF) conflict (Beckel et al., 2023; Gajendran et al., 2024; Shifrin et al., 2021).

Whether employees benefit from remote work opportunities is dependent on the job characteristics and working conditions (Allen et al., 2024; Beckel & Fisher, 2022). Social support, autonomy and isolation have been found to be linked to remote work outcomes (Gajendran et al., 2024; Gajendran & Harrison; 2007; Wang et al., 2021). The supervisor plays a crucial role in this through support and control behaviors with the employees (Gan et al., 2023; Lautsch & Kossek, 2011; Thomas et al., 2022).

Managing employees and building a good quality relationship demands that supervisors and employees connect at least to some extent. However, supervisors and employees might not always be in accordance with their remote work schedules. In a scenario where the supervisor works primarily in the office while the employee is working mostly from home, the opportunities for the supervisor and the employee to make communication, build trust and their relationship as well as develop individual support measures might be limited and impeded (Klebe et al., 2024). On the other hand, a proficient remotely working supervisor might be used to virtually connecting and building relationships just fine (Park & Cho, 2022). They might even offer more understanding and support for remotely working employees, due to their own experience and probable preference for remote work (Parker et al., 2020).

Hence, it is important to understand the impact of different remote working patterns between supervisors and their employees. Therefore, in this study, we investigated how the remote work intensity of the supervisor influences the relationship between the remote work intensity of their employee and their performance and work-family conflict.

Our study contributes to the remote work research in a theoretical and practical way. Recent research has found mostly beneficial relationships between remote work intensity and employee performance and WF conflict (Allen et al., 2015; Beckel et al., 2023; Gajendran & Harrison, 2007). However, there are some mixed results which point at some influencing variables like autonomy, isolation or telepressure (Allen et al., 2024; Gajendran et al., 2024; Hong & Jex, 2022; Metselaar et al., 2022). Supervisor support has been found to play an important role as well (Lautsch & Kossek, 2011; Thomas et al., 2022). However, the supervisor's own remote work behavior, although having a strong impact on the supervisor's availability, has so far not been thoroughly investigated in the remote work context (Kim et al., 2021; Park & Cho, 2022).

Secondly, we contribute considerations to the practical management of remote work arrangements for both, organizations as well as individuals. If employee and organizational outcomes are dependent on the congruence of supervisor and employee remote work patterns, it might influence recruiting, team policies, supervisor training or individual work routines, in order to achieve the best fit between employees and supervisor.

Theoretical Framework and Hypotheses

Remote Work Intensity (RWI)

Remote work, also referred to as telework, telecommuting, working from home or flexible work arrangements, describes the possibility to perform work outside the regular work location, usually at home instead of the office (Gajendran et al., 2024). The number of employees working at least partly remote has constantly increased over the last decades and stabilized at around a third globally, mainly due to technological advancements but also due to the Covid-19 pandemic, that forced most organizations to eventually implement respective structures (Allen et al., 2024; Shifrin & Michel, 2022). Working remotely is often characterized as a dichotomous variable although it is nowadays rarely an all-or-nothing approach (Allen et al., 2015; Golden, 2006). Teleworkers can have quite substantial differences in how much time they spend away from the office and how they distribute their remote work across the week (Kim et al., 2021).

The remote work intensity (RWI) refers to the “extensiveness of remote work ranging from one or two days a week to full-time remote work” (Gajendran, 2024, p.1). A moderate RWI is linked to many positive outcomes on employee and organizational level like job satisfaction, health, WF conflict, organizational commitment, performance and turnover intentions (Allen et al., 2015; Beckel et al., 2023; Gajendran et al., 2024; Shifrin & Michel, 2022). While some outcomes seem

to increase with an increasing RWI, like supervisor relationship quality, autonomy and isolation, others tend to decrease with a higher RWI like relationship quality with coworkers and WF conflict (Allen et al., 2015; Golden, 2007).

With increasing remote work intensity, remote workers increasingly differ from office-based workers at least in some respects: firstly, remote workers spend less time in collaborative workspaces and therefore reduce in general opportunities to meet and exchange with others in person. Secondly, remote workers are at least to some extent dependent on information and communication technologies (ICT) to stay connected to the work environment and therefore should possess a certain ICT experience. Thirdly, remote working employees experience at least some integration of work and life domains and the respective boundary management. And lastly, working remotely is usually a choice (outside of a pandemic) and therefore, remote workers should have at least a small preference and positive attitude towards it.

RWI and performance

Work performance describes the individual's contribution to the organization and is an essential variable of management and organizational behavior (Carpini et al., 2017). Individual work performance includes task performance and contextual performance next to adaptive performance (Koopmans et al., 2011). While task performance refers to the formally prescribed work goals concerning content, amount and quality, contextual performance describes behaviors that go beyond the actual work goals like "individual behaviors that support the organizational, social, and psychological environment in which the technical core must function" (Koopmans et al., 2011, p. 858).

The individual work performance of an employee in their individual role is strongly determined by motivational factors like autonomy and self-efficacy as well as social aspects like leadership behaviors and support (Carpini & Parker, 2017; Crant, 2000; Parker et al., 2006). Accordingly, organizations benefit from promoting social support, good quality relationships between leaders and employees, and a high level of job autonomy to increase performance (Nielsen et al., 2017).

In a remote work environment, the autonomy to decide when and where to work typically increases, which positively influences motivation and accordingly performance (Gajendran et al., 2014; Gajendran & Harrison, 2007). There is often also a saving in time due to the omitted commute, which supports a positive work output (Gajendran & Harrison, 2007; Park & Cho, 2022). Working remotely can also reduce interruptions through co-workers in an open or busy space office, which could negatively impact performance (Wessels et al., 2019). When comparing the performance within persons, Delanoëije and Verbruggen (2020) found higher

performance ratings on remote working days than on office days. However, some studies also found mixed results for telework and performance which might point to moderating factors (Gajendran & Harrison, 2007; Park & Cho, 2022), a curvilinear relationship similar to RWI and other outcomes like satisfaction (Golden, 2006; Huo et al., 2024; Park et al., 2023) or the lack of longitudinal study designs (de Menezes & Kelliher, 2011). In summary, recent research accommodating for many of those factors show in general positive relationships between remote work and performance (Allen et al., 2024; Gajendran et al., 2024; Gajendran et al., 2014; Metselaar et al., 2022).

Based on these assumptions, we propose the following hypothesis:

Hypothesis 1: *The employees' remote work intensity is positively related to their performance (task and contextual).*

RWI and WF conflict

The impact of remote work goes beyond the workplace. Typically, remote work is carried out from the home, often in the same place where the private life, family, housework or hobbies are located. The increased flexibility and permeability of the work role make role transitions between different life domains much easier (Ashforth et al., 2000).

Work family conflict occurs when demands from the work role are not compatible with demands from the family role and thus making participation in the family role more difficult (Byron, 2005). It is driven by work demands like work hours and work pressure (Allen, 2023; Allen et al., 2020). Work family conflict has a strong relationship with social support in the workplace and work characteristics like job autonomy and schedule flexibility (Kossek et al., 2011; Michel et al., 2011; Yucel, 2019).

WF conflict includes time-based and strain-based conflict besides behavior-based conflict (Carlson, 2000; Greenhaus & Beutell, 1985). Time-based conflict emerges, when time dedicated to one role hinders the performance in the other role, while strain-based conflict occurs when stress or tension from one role makes performance in the other role more difficult (Michel et al., 2011). WF conflict is associated with several negative outcomes like increased stress and reduced satisfaction and performance (Allen et al., 2020; Amstad et al., 2011; Carlson et al., 2000), which makes it worthwhile to prevent, also for organizations.

In a remote work setting the job autonomy typically increases, as employees have more freedom and flexibility in scheduling their workday which helps balancing work and family roles and therefore reduces time-based conflict (Beckel et al., 2023; Delanoëije & Verbruggen, 2020; Hong

& Jex, 2022). The hours available to schedule work tasks typically increase due to the missing commute which allows better matching of working hours with the timeline of demands from the private life domain (Gajendran & Harris, 2007; Park & Cho, 2022). Due to the easily possible role transitions it is also much easier to combine demands from different roles like shared family lunches, where not the time but the proximity would be the restrictive factor.

Working remotely is associated with increased physical health and less stress which helps reduce strain-based conflict (Beckel & Fisher, 2022; Delanoëije & Verbruggen, 2020). It can also prevent distraction, interruptions and cognitive workload from an open office space, which could lead to strain (de Croon et al., 2005; Wessels et al., 2019). Furthermore, employees choosing to work remotely are likely to have a preference for it, therefore allowing alignment of preference with behavior which also reduces stress (Gadeyne, 2018). Lastly, time-based conflict can lead to strain symptoms, therefore a reduction of time-based conflict should also have a positive effect on strain-based conflict (Golden et al., 2006; Greenhaus & Beutell, 1985).

Some studies find that remote work, but only when it leads to supplemental work, increases conflict (Derks et al., 2015; Hong & Jex, 2022; Fenner & Renn, 2010). Generally though, remote work is associated with lower levels of WF conflict, as long as it takes place within the usual work agreement and with a certain amount of autonomy (Beckel et al., 2023; Gadeyne et al., 2028; Gajendran et al., 2024).

Based on these assumptions, we propose the following hypothesis:

Hypothesis 2: *The employees' remote work intensity is negatively related to their WF conflict (time-based and strain-based).*

The role of the supervisor in the remote work context

Whether employees benefit from remote work is largely dependent on the job characteristics like autonomy and the working conditions like schedule flexibility (Allen et al., 2024; Beckel & Fisher, 2022; Gan et al., 2022). Social support is also linked to a positive remote work experience (Campo et al., 2021; Thomas et al., 2022; Wang et al., 2021). Since the supervisor is the main instance to determine the immediate job characteristics and working conditions and is an important source of support in the work environment, the supervisor is the key driver to a positive remote work experience for the employees (Gan et al., 2023; Lautsch et al., 2009).

Building a high-quality relationship, also described as leader-member-exchange is the basis for effective leadership (Bagger & Li, 2014; Dulebohn et al., 2011; Guo et al., 2024; Straub, 2012). This includes control processes like setting objectives and monitoring as well as social behaviors

like training and support (Golden & Gajendran, 2019; Gan et al., 2022; Lautsch et al., 2009). While both control and support behaviors are important, support behaviors should go beyond control behaviors for a positive result (Gan et al., 2024; Parker et al., 2020). Supervisor support behaviors are linked to various positive employee outcomes like performance, WF conflict and well-being (Guo et al., 2024; Thomas et al., 2022; Odle-Dusseau et al., 2012; Straub, 2012).

In the remote work context, building and maintaining the relationship between the supervisor and the employee might be impaired, due to less opportunities to conventionally connect and exchange in person (Klebe et al., 2024). While remote work is a resource for employees, managing remote workers is considered a demand for supervisors (Ninaus et al., 2021; Park & Cho, 2022). Some studies found that more extensive telecommuting is associated with enhanced relationship quality at least with the leader (Allen et al., 2015; Golden, 2006). Golden and Fromen (2011) found that employees with teleworking supervisors report less positive work experiences and work outcomes, but only when they are not remotely working as well. Remotely working employees with remotely working supervisors reported more positive work experiences and work outcomes than remotely working employees with supervisors in traditional work modes. Perceived similarity and shared experiences can increase the supervisor-employee relationship (Dulebohn et al., 2011; Golden & Fromen, 2011). In a work environment, where both, the supervisor and the employee are working remotely, developing shared understandings, enhanced social exchanges and stronger relationships might be fostered (Golden & Fromen, 2011; Park & Jae, 2022).

Furthermore, remotely working supervisors also gain practical experience from managing remote workers and improve their remote leadership skills (Park & Cho, 2022). This is particularly important, as Parker et al. (2020) found that 40% of supervisors do not feel confident in managing remote workers. Losing visibility and trust in remote working employees might lead to control behaviors like micromanagement and unreasonable expectations of constant availability (Park & Cho, 2022; Parker et al., 2020). These behaviors could harm the employee's perceived autonomy, reduce work outcomes and facilitate WF conflict (Derks et al., 2015; Gajendran & Harrison, 2007; Lautsch et al., 2009). Therefore, it is beneficial for remotely working employees to have supervisors which also engage in remote work.

Remotely working supervisors might also be more likely to provide more specific social support to remote workers, as they experience similar challenges and might be more empathic towards remote workers' demands (Julien et al., 2011). Supervisors can encourage work-family boundary management and help reduce WF conflict (Lautsch et al., 2009). Supervisors can also develop appropriate leadership skills when dealing with teleworking employees which have beneficial

effects (Kim et al., 2021; Park & Cho, 2022). In remote work settings, employees might benefit even more from social support, as it compensates for being more isolated from the workplace and helps with emerging remote work challenges like balancing work and family life (Golden & Gajendran, 2019; Michel et al., 2011).

Supervisors are also important role models in the remote work context. Employees can learn from remotely working supervisors how to organize work or balance work and private life in a remote setting (Chambel, 2023; Koch & Binnewies, 2015). Supervisors also set social norms for employees with their own behavior, which offers an opportunity to lead on with a good example and set healthy boundaries between work and private life domains. This supervisor behavior is in turn positively associated with detachment from work and reduced WF conflict at employee level (Derks et al., 2014; Park et al., 2011).

In summary, supervisors in remote work situations should stay in close contact with their employees, but in a supportive and sharing way, not in monitoring way (Golden & Gajendran, 2019; Lautsch et al., 2009; Parker et al., 2020). Shared experiences and similarity in working remotely should have a positive impact on their relationship, role modeling and leadership behavior (Dulebohn et al., 2011; Golden & Fromen, 2011). Moreover, remotely working supervisors should gain personal experience in remote work challenges and therefore be able and potentially more willing to provide specific support (Golden & Gajendran, 2019; Lautsch et al., 2009; Park & Cho, 2022).

Moderation of supervisor RWI and performance and WF conflict

A remotely working supervisor has more similarities and shared experiences with a remote worker than an office-based supervisor (Golden & Fromen, 2011). They should have relevant ICT structures and competences in place which supports a high level of communication and helps mitigate isolation (Gajendran et al., 2014; Lautsch et al., 2009). This improves the relationship quality, which in turn has a positive impact on autonomy, trust, and motivation and consequently performance (Gajendran & Harrison, 2007; Nielsen et al., 2017; Park & Jae, 2022). Additionally, the personal remote work experiences and consequently the specific support behaviors should be higher, which should also support performance outcomes (Lautsch et al., 2009; Park & Cho, 2022).

Based on these assumptions, we propose the following hypothesis:

Hypothesis 3: *The supervisor's remote work intensity increases the positive relationship of employee RWI and performance.*

A good relationship quality and autonomy should also increase schedule flexibility, which helps balancing work and family roles and reduce WF conflict (Beckel et al., 2023; Michel et al., 2011; Yucel, 2019). Remote working supervisors should gain more personal experience and understanding in managing different life domains and therefore offer more specific support like setting boundaries, which is critical in preventing WF conflict (Lautsch et al., 2009; Julien et al., 2011). They can also act as positive role models in their own boundary management and help reduce expectations in employees (Chambel, 2023; Koch & Binnewies, 2015). Similar working supervisors and employees might also benefit from shared understandings, leading to enhanced social exchanges which also reduces WF conflict (Golden et al., 2006; Golden & Fromen, 2011).

Based on these assumptions, we propose the following hypothesis:

Hypothesis 4: *The supervisor's remote work intensity increases the negative relationship of employee RWI and WF conflict.*

Method

Participants and procedure

Participants came from a wide range of different small to large-sized companies in Switzerland operating in various sectors. The sample size consisted of 512 employees in 74 teams with a supervisor each. The participants were overall balanced in terms of age and gender, with 59% female and 41% male and age distributed with 18% under 30, 30% between age 30 and 40, 24% between age 40 and 50, 23% between age 50 and 60 and 5% above age 60. A total of 19% lived alone, 43% with at least one other adult in the same household, and 38% with one or more children. The participants were predominantly highly educated (56%) and worked mostly at a high pensum ($M = 86\%$; $SD = 18.3\%$). The employees all worked partly remotely with 13% less than 2 days a week, 34% between 2 and 3 days, 21% between 3 and 4 days and 32% 4 days and more.

The supervisors of the participants were also overall balanced in terms of age and gender, with 53% female and 47% male and age distributed with 28% under age 40, 41% between age 40 and 50 and 31% age 50 and above. The supervisors all worked partly remotely as well, in a similar extent as the employees with 17% less than two days a week, 22% 2 days a week, 38% less than 4 days a week and 24% 4 days and more.

Participants were recruited during 12 months from spring 2022 through our homepage, social media (e.g., LinkedIn), and private and business networks targeting supervisors and their teams

with the possibility of remote working. All employees and supervisors were going through two surveys (wave 1 and wave 2) and were part of our wider project. Supervisors and their employees were registered as individual teams in the beginning, so the data of the supervisors could be matched with their respective employees during the data collection. The participants then received invitations to fill out the surveys of all waves via email with wave 1 starting straight away and wave 2 invitation following after about 2 months. Of the 512 participants that completed wave 1, 406 also completed wave 2 survey, while their 74 supervisors completed wave 1 and 65 also wave 2.

Measures

Employees were instructed to give self-reports and rate each statement according to their personal agreement. Supervisors were given the same items but were additionally asked to provide external reports on their employees' performance.

RWI

The remote work intensity of both the supervisor and the employees was assessed in wave 1 using a slider from 1 to 7 days per week with gradation in half days. The participants were asked "On how many days during the week do you work at least partly from home (independently of your work pensum)?"

Conflict

WF conflict was measured in wave 2 using the scale from Carlson et al. (2000) in a German translation. Participants were asked to rate each item from 1 (*strongly disagree*) to 5 (*strongly agree*). We used three items for time-based WF conflict, sample items include "My work keeps me from my family activities more than I would like", and three items for strain-based WF conflict, sample items include "Due to all the pressures at work, sometimes when I am home I am too stressed to do the things I enjoy". Cronbach's Alpha was .82 for time-based conflict and .89 for strain-based conflict (see Table 1).

Performance

Self-reported performance of the participants was measured in wave 2 using the slightly adapted scale from Koopmans et al. (2014) in a German translation. Participants were asked to rate how frequent several statements concerning their own performance applied within the last month (original version states 3 months) on a scale ranging from 1 (*seldom*) to 5 (*always*). We used 5

items for task performance, sample items include “In the past month, I managed to plan my work so that it was done on time”, and eight items for contextual performance, sample items include “In the past month, I worked at keeping my job knowledge up to date”. Cronbach’s Alpha was .86 for task performance and .86 for contextual performance (see Table 1).

Externally reported performance of the participants was assessed in wave 2 through the supervisors using adapted singles items of the scale from Koopmans et al. (2014). The supervisors were asked to give performance ratings for each registered team member on how they evaluate their task performance and contextual performance on a scale ranging from 1 (*seldom*) to 5 (*always*). The task performance item was “In the past month, they were able to complete their work efficiently”, and the contextual performance item was “In the past month, they worked at keeping their job skills up to date”.

Statistical analyses

First, we tested the factor structure and internal reliability of our variables with a series of confirmatory factor analyses (CFA) using R. The model fit was assessed by the comparative fit index (CFI), the Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA) (Hu & Bentler, 1999). The best model fit was achieved with two factors (time-based and strain-based) for WF conflict and two factors (task and contextual) for performance (see Table 2). To test our hypotheses, we used multilevel analyses to account for the nested team structure of our data. We set team as random slope and used the linear mixed-effects models function (*LMER*) of the LME4 package in R to investigate the effects of our predictors and moderators. The predictors and moderations were measured in wave 1 and our outcomes in wave 2. We used a grand mean centering on the predictors and moderators and analyzed first linear relationships in the model. Since some previous studies showed curvilinear relationships, where remote work was associated with beneficial effects in different outcomes up to a certain point and subsequently exhibited decreasing or even detrimental effects, we investigated a possible curvilinear relationship underlying our models as a second step (Park et al., 2023; Ren et al., 2023).

Table 1 Means, Standard Deviations, and Correlations of the Measures

Variable		<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. RWI ⁺	self	3.00	1.36							
2. RWI sup ⁺	self	3.07	1.39	.14*						
3. T CON	self	2.40	0.86	.10	.06	.82				
4. S CON	self	2.21	0.90	-.06	.05	.56*	.89			
5. T PERF	self	3.68	0.63	.01	.04	-.23*	-.36*	.86		
6. T PERF ⁺	ext	3.84	0.91	.00	.14*	-.04	-.07	.14*		
7. C PERF	self	3.30	0.72	-.03	-.06	-.07	-.17*	.48*	.07	.86
8. C PERF ⁺	ext	3.43	1.08	.02	.15*	.02	-.02	-.03	.48*	.06

Note. Cronbach α reliabilities are provided on the diagonal. RWI = Remote work intensity, RWI sup = the supervisor's remote work intensity, T CON = time-based conflict, S CON = strain-based

conflict, T Perf = task performance, C PERF = contextual performance. Self = self-reported, ext = externally reported. * indicates $p < .05$. ⁺ indicates single item.

Results

Confirmatory factor analyses were carried out for the scales WF conflict with two subscales time-based and strain-based conflict and self-reported performance with two subscales task and contextual performance. The model fit and factor structures showed good results (Table 1). All factor loadings were over .79 for WF conflict and .70 for self-reported performance.

Table 2 *Multilevel Confirmatory Factor Analyses for Our Measures*

Model per variable	χ^2	<i>df</i>	CFI	TLI	RMSEA	SRMR
WF conflict	17.02	8	.995	.990	.087	.027
Self-reported performance	649.20	64	.985	.982	.147	.089

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root mean square residual. All χ^2 are significant.

Main effects and moderation

Multilevel analyses (Table 3) showed no significant main effects of the employee's remote work intensity on their task or contextual performance in neither, the self or external report. Therefore, Hypothesis 1, that the employees' remote work intensity is positively related to their performance (task and contextual) has to be rejected. However, there was a significant main effect of the supervisor's remote work intensity on task performance ($B = 0.13, p = .016$) and contextual performance ($B = 0.25, p < .001$), but only in the external report through the supervisor. That means while the supervisors rated the employees' performance higher when they themselves worked more remotely, the employees did not. Accordingly, Hypothesis 3, that the supervisor's remote work intensity increases the positive relationship of employee RWI and performance has to be rejected, although there was a significant main effect, but no moderation. There were no additional significant effects using a curvilinear relationship model for the analyses. Results can be found in Supplemental Materials S1.

Multilevel analyses (Table 4) showed a significant relationship in time-based conflict for remote working employees ($M = 0.11, p < .001$). However, contrary to our prediction the effect was positive, meaning with more remote work intensity, time-based conflict was higher as well. There was also no significant effect for strain-based conflict. Therefore, hypothesis 2 must be rejected, that the employee's remote work intensity is negatively related to their WF conflict (time-based and strain-based). There was also no main effect or moderation of the supervisor's remote work intensity on the employee's WF conflict. Therefore, Hypothesis 4, that the supervisor's remote work intensity increases the negative relationship of the employee's RWI and WF conflict has to

be rejected as well. There were no additional significant effects using a curvilinear relationship model for the analyses. Results can be found in Supplemental Materials S2.

Table 3 Results of the Multilevel Analyses for Performance

	Task performance				Contextual performance			
	Self-report		Supervisor report		Self-report		Supervisor report	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	3.65	0.04	3.82	0.08	3.30	0.04	3.37	0.11
RWI	-0.01	0.03	0.02	0.04	0.02	0.03	0.03	0.04
RWI sup	0.02	0.03	0.13	0.05*	-0.01	0.03	0.25	0.07*
RWI * RWI sup	0.01	0.02	0.03	0.02	-0.01	0.02	-0.01	0.02

Note. Employees *N* = 487. RWI = remote work intensity, RWI sup = the supervisor's remote work intensity. *B* intercept = estimated mean. * significant ($p < .05$).

Table 4 Results of the Multilevel Analyses for WF Conflict

	Time-based conflict		Strain-based conflict	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	2.42	0.05	2.24	0.06
RWI	0.11	0.04*	0.02	0.04
RWI sup	0.00	0.04	-0.01	0.04
RWI * RWI sup	0.01	0.02	-0.01	0.02

Note. Employees *N* = 489; RWI = remote work intensity, RWI sup = the supervisor's remote work intensity. *B* intercept = estimated mean. * significant ($p < .05$).

Discussion

Working remotely has become a standard working condition for employees that allows for more flexibility in designing individual work patterns regarding time and location of work during the week (Allen et al., 2024; Gajendran et al., 2024). While this offers additional opportunities and flexibility for employees, it also entails limitations and additional effort for organizations and supervisors (Klebe et al., 2024; Ninaus et al., 2021; Park & Cho, 2022). Supervisors play a crucial role in the success of the remote work experience of their employees through support and control processes (Gan et al., 2023; Lautsch & Kossek, 2011; Thomas et al., 2022). If supervisors and employees share a certain similarity in the way they work remotely, they are likely to benefit from shared experiences and aligned preferences, which may positively influence their relationship and support behaviors and in consequence have a positive impact on performance and WF conflict (Golden & Fromen, 2011; Lautsch et al., 2009; Park & Cho, 2022).

Therefore, we analyzed the impact of the RWI of 512 employees on their task and contextual performance and on their time-based and strain-based WF conflict. Additionally, we investigated if the RWI of their 74 supervisors moderated these relationships. While we did not find any significant relationships between the personal RWI and task or contextual performance, we found a significant relationship between the supervisors' RWI and their employees' task and contextual performance, indicating that with increasing supervisor RWI the supervisor report of employee performance increased as well. Contrary to our assumptions, time-based conflict (but not strain-based conflict) showed a positive relationship with personal RWI, meaning the higher the employee's own RWI, the higher their time-based conflict. We did not find any evidence for a moderation of the relationships between personal RWI and the outcomes through the supervisor's RWI. Further research is needed in order to better understand the meaning of the congruence between the employee's and the supervisor's remote work behaviors.

Theoretical Contributions

With our study, we added to the existing research about remote work designs showing that remote work intensity is linked to performance as well as WF conflict (Allen et al., 2015; Beckel et al., 2023; Gajendran & Harrison, 2007). With this we contribute to the prevailing view in the scientific community that remote work designs have a significant impact on both private and professional life and therefore need to be carefully planned and weighed against their potential consequences.

Although the relationship between remote work and performance has been well studied in the literature with proven effects on task and contextual performance in both self and supervisor report, we did not find any of these relationships to be significant in our study (Gajendran et al., 2024; Gajendran et al., 2014; Metselaar et al., 2022). These results suggest that the underlying relationships are likely more complex and may be influenced by other factors or moderating variables like job characteristics, working conditions, the social context or organizational factors (Gajendran et al., 2014; Golden & Gajendran, 2019; Park & Jae, 2022). For example, some studies found influencing variables like autonomy, isolation or telepressure to play a role in the relationship between RWI and performance (Allen et al., 2024; Gajendran et al., 2024; Hong & Jex, 2022; Metselaar et al., 2022).

We did find a significant relationship between RWI and time-based WF conflict. However, contrary to our assumptions, we found that increased RWI is linked with increased WF conflict. Although these results are unexpected, they are consistent with some previous research that has reported partly contradictory or inconsistent findings concerning WF conflict in the context

of remote work (Abendroth & Reimann, 2018; Allen et al., 2013; Beckel et al., 2023). Saving in time due to the omitted commute as well as reduced interruptions in busy office spaces might save time, however, there might be factors offsetting these effects like additional work hours (Gadeyne et al., 2018). It is also possible that our findings are caused by social norms like the pressure to be available for work during non-work times. This would be in line with findings, that the availability for work outside working hours is linked to WF conflict (Kühner et al., 2023; Derks et al., 2015).

We did not find a significant moderation of the supervisors' RWI on the relationship of the employees' RWI and their performance or WF conflict. Therefore, we must currently assume that the congruence between the supervisor's and their employees' RWI is not decisive for the effects the employees' own remote work behavior has on their performance or WF conflict. However, we did find a significant relationship of the supervisors' RWI with the performance of their employees. Interestingly, this was only significant in the supervisor report, meaning the more the supervisors worked remotely, the higher they rated their employees' task and contextual performance while the employees did not rate their performance to the same extent. This could be caused by supervisors using less control behaviors when working more remotely, which could result in a more favorable ratio of control and support processes (Gan et al., 2023; Lautsch & Kossek, 2011; Thomas et al., 2022). Less control and more autonomy could increase the employees' motivation and in consequence performance (Gajendran et al., 2014; Gajendran & Harrison, 2007). This, however, would not explain why employees did not perceive the same dependency of their performance and their supervisor's RWI. It is also possible that the direction of the relationship is inverse. For example, supervisors, that perceive their employees as highly performing, and therefore not in need of hands-on control and support behaviors, could choose to increase their RWI, as they trust their employees will be fine without close supervision. This would be in line with findings that trust and relationship quality are crucial for beneficial leadership behaviors in remote work settings (Nielsen et al., 2017; Park & Cho, 2022; Parker et al., 2020). This would also be in line with the fact that task and contextual performance increased both, although particularly contextual performance, the extra-role behaviors, like collaboration and initiation may be even more difficult to assess when leading more distantly.

In summary, our findings show a significant relationship between the supervisor's remote work behaviors and performance in their employees, adding to current research that proposes a meaningful association between supervisor behaviors and the employee's remote work experience (Lautsch & Kossek, 2011; Park & Cho, 2022; Thomas et al., 2022). However, more

research is needed to further investigate the role of the supervisor, the preconditions and consequences in the remote work context (Kim et al., 2021; Park & Cho, 2022).

Limitations and Implications for Future Research

The first limitation of our study is the fact that all our participants were working remotely to at least to some extent. We did not have any supervisors that did not work remotely at all. With this, the variance of our sample was limited to the remote work intensity but did not include the comparison of remotely working and fully office-based participants. With this, we were able to analyze whether the degree of alignment in the remote working behavior was significant for the relationships with performance and WF conflict, however, we were not able to compare remotely working employees and supervisors with employees and supervisors that do not choose to work remotely at all. Although similarity, experience with and preference for remote work might differ between supervisors with different remote work intensities, it is likely that all remotely working supervisors align with their remotely working employees at least to some extent. Including office-based supervisors might have provided a broader perspective. While we must conclude from the present study, that the congruence of the employees' and supervisors' RWI is not decisive for performance and WF conflict, it is possible that the comparison between remotely and not remotely working supervisors and employees might have led to different results (Golden & Fromen, 2011; Parker et al., 2020). Future research might include remotely working as well as office-based participants to further investigate the effects of the congruence of their work designs.

Furthermore, due to the set-up of our data collection, the time span between wave 1 and wave 2 did differ substantially between participants. This allowed for other influence factors that we did not control for to affect our results. Especially with a data collection in the period after the Covid-19 restrictions, when all participants experienced times of change, our results might be more difficult to compare. Ideally, further research about remote work behaviors would not be rolled out in times of instability regarding the investigated variables.

Lastly, we did not include other aspects of the supervisor's and their employees' relationships in the remote work context in our study. Although we hypothesized that specific supervisor support behaviors as well as relationship quality might be dependent on the remote work congruence, we did not measure these variables directly. A better understanding of how these aspects are linked in the supervisor-employee relationship in the remote work context might provide more insights for future research.

Practical Implications

Although we did not find the congruence of RWI between supervisor and employee to have a significant link to the employees' performance or WF conflict, we did show that the supervisor's remote work behavior is of relevance for the employees, since it is linked with their performance evaluation. While the direction and validity of the observed effects still need to be substantiated, they indicate that employees might benefit from remotely working supervisors at least regarding their performance appraisal. Consequently, employees might consider their supervisors' RWI when choosing a new role or responsibility, independently of their own remote work preference. Supervisors should be aware of the dependencies between their RWI and their employees' performance appraisals to carefully reflect their leadership behaviors. Moreover, it might be advisable in any case to strengthen leadership competencies for remote work whether they choose to work remotely themselves or manage employees who do (Park & Cho, 2022; Parker et al., 2020).

We found the personal RWI to be linked with time-based WF conflict, whereby time-based WF conflict intensified with the extent of remote work. Research has shown mixed findings in regard to remote work and WF conflict in the past. Some studies showed WF conflict to decrease with the level of remote work due to savings in time and increased flexibility while others found greater levels of WF conflict due to more permeable boundaries between work and private life and consequently an increased risk for extended availability for work (Allen et al., 2015; Beckel et al., 2023; Gajendran & Harrison, 2007). Hence, the extent to which WF conflict is affected by remote work appears to be contingent upon additional variables. Individuals should therefore carefully consider and outweigh the consequences their RWI might have on their work and private life.

Conclusion

In this study, we analyzed the relationship of employees' RWI on their task and contextual performance but did not find any significant relationships. We also analyzed the relationship of employees' RWI and their time-based and strain-based WF conflict and did find a significant effect for time-based conflict. However, contrary to our assumption, time-based conflict increased with increasing RWI. We did not find a significant moderation of the supervisor's RWI; however, we found a significant association between supervisors' RWI and task and contextual performance in the supervisors' report. This leads to the assumption that high performing employees might not be in need of hands-on leadership behaviors and therefore supervisors choosing to work more remotely. Limitations and implications for future research are discussed

and more investigation is needed to better understand the nature and directions of the relationships of the supervisors' remote work behaviors and employee outcomes.

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Supplemental Materials

S1. Results of the Multilevel Analyses for Performance (Curvilinear Relationship Model)

	Task performance				Contextual performance			
	Self-report		External report		Self-report		External report	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	3.61	0.05	3.75	0.09	3.25	0.05	3.23	0.13
RWI	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.02
RWI sup	0.02	0.01	0.04	0.02*	0.01	0.01	0.07	0.02*
RWI * RWI sup	-0.00	-0.00	0.00	0.00	-0.00	0.00	-0.00	0.00

Note. Employees N = 487. RWI = remote work intensity, RWI sup = the supervisor's remote work intensity. B intercept = estimated mean. * significant ($p < .05$).

S2. Results of the Multilevel Analyses for WF Conflict (Curvilinear Relationship Model)

	Time-based conflict		Strain-based conflict	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Intercept	2.36	0.06	2.26	0.07
RWI	0.04	0.02*	0.01	0.02
RWI sup	-0.01	0.01	-0.02	0.01
RWI * RWI sup	0.00	0.00	-0.00	0.00

Note. Employees N = 489; RWI = remote work intensity, RWI sup = the supervisor's remote work intensity. B intercept = estimated mean. * significant ($p < .05$).