

Fostering Health and Performance in Times of Constant Connectivity: A Multilevel Investiga- tion with Special Emphasis on the Leader's Role

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The President:

Prof. Dr. Bernhard Ehrenzeller

This dissertation is dedicated to my family

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Table of Contents

List of Tables.....	VI
List of Figures	VII
List of Abbreviations.....	VIII
Executive Summary	X
Zusammenfassung.....	XI
1 The Interplay Between ICTs, Health, and Leadership in the New World of Work	1
1.1 Information and Communication Technologies in the New World of Work	1
1.1.1 New Forms of Working.....	1
1.1.2 The Rise of Information and Communication Technologies	7
1.1.3 Work-Related Usage of Information and Communication Technologies After Hours	8
1.2 Health in Organizations – Significant from both an Economic and Ethical Perspective	14
1.3 Leadership Gains Importance in the New World of Work.....	16
1.4 Research Questions	18
2 Great Research Interest but Many Open Questions: A Theoretical Look at Work-Related ICT Use After Hours.....	21
2.1 Positioning the Concept and Theoretical Relevance of After-Hours Work- Related ICT Usage.....	21
2.1.1 A Look at After-Hours Work-Related ICT Usage from the Job Demands-Resources Perspective	21
2.1.2 After-Hours ICT Usage and Boundary Theory.....	25
2.2 ICT Usage After Hours for Work Purposes: A Literature Review	27
2.2.1 Antecedents of ICT Usage After Hours	28
2.2.2 The Bright Side of ICT Usage After Hours	31
2.2.3 The Dark Side of ICT Usage After Hours	32
2.2.4 Moderating Factors of ICT Usage After Hours.....	34
2.3 Research Gaps and Intended Contributions	36
2.3.1 The Influence of Executives' ICT Usage After Hours on Their Job Performance	36

2.3.2	Boundary Conditions at the Individual Level Influencing the Effects of Executives' ICT Usage After Hours.....	37
2.3.3	Executives' ICT Usage and Employees' Health.....	37
2.3.4	The Impact of Executives' ICT Usage on the Organizational States and Organizational Outcomes	38
2.3.5	Boundary Conditions at the Collective Level Influencing the Effects of Executives' ICT Usage After Hours.....	39
2.3.6	Antecedents and Effects of Boundary Control at Multiple Levels.....	40
2.4	Methodological Approach	41
2.5	Outline of the Dissertation.....	43
2.5.1	First Chapter – The Interplay Between ICTs, Health, and Leadership in the New World of Work.....	43
2.5.2	Second Chapter – Great Research Interest but Many Open Questions: A Theoretical Look at Work-Related ICT Use After Hours	43
2.5.3	Third Chapter – Study 1: The Impact of After-Hours Work-Related Smartphone Use by Executives on Their Job Performance	44
2.5.4	Fourth Chapter – Study 2: An Organizational-Level Model of Leaders' After-Hours Work-Related Smartphone Use and Employee Well-Being.....	45
2.5.5	Fifth Chapter – Study 3: How Organizations Foster Collective Boundary Control and What is in It for Them	45
2.5.6	Sixth Chapter – Promoting Health and Performance in the Era of Constant Accessibility	46
3	Study 1: The Impact of After-Hours Work-Related Smartphone Use by Executives on Their Job Performance	50
3.1	Introduction	51
3.2	Theoretical Background and Hypotheses Development.....	55
3.2.1	The Effect of After-Hours Work-Related Smartphone Use by Executives on Their Work Flexibility	56
3.2.2	The Moderating Influences of Polychronicity, Formalization, and Job Pressure.....	58
3.2.3	From Work Flexibility to Job Performance.....	61
3.2.4	An Integrative Model of After-Hours Work-Related Smartphone Use and Job Performance.....	62
3.3	Methods	63
3.3.1	Data Collection and Sample.....	63
3.3.2	Measures.....	64
3.3.3	Convergent and Discriminant Validity	66
3.3.4	Analytical Techniques	66

3.4 Results.....	67
3.4.1 Descriptive Statistics and Intercorrelations	67
3.4.2 Hypothesis testing.....	69
3.5 Discussion.....	79
3.5.1 Theoretical Implications	79
3.5.2 Managerial Implications.....	80
3.5.3 Limitations and Directions for Future Research	82
3.5.4 Conclusion.....	83
4 Study 2: An Organizational-Level Model of Leaders' After-Hours Work-Related Smartphone Use and Employee Well-Being	84
4.1 Introduction	85
4.2 Theoretical Background and Hypotheses Development.....	88
4.2.1 The Relationship Between Leaders' After-Hours Work-Related Smartphone Use and the Climate of Universal Availability	89
4.2.2 The Moderating Role of Employees' Collective Boundary Control.....	92
4.2.3 The Climate of Universal Availability and Collective Emotional Exhaustion.....	94
4.2.4 A Moderated Mediation Model of Leaders' After-Hours Work-Related Smartphone-Use and Collective Emotional Exhaustion.....	97
4.3 Methods	97
4.3.1 Data Collection and Sample.....	97
4.3.2 Measures.....	99
4.3.3 Convergent and Discriminant Validity	101
4.3.4 Analytical Techniques	102
4.4 Results.....	102
4.4.1 Descriptive Statistics and Intercorrelations	102
4.4.2 Hypothesis Testing	104
4.5 Discussion.....	108
4.5.1 Theoretical Implications	108
4.5.2 Managerial Implications.....	109
4.5.3 Limitations and Directions for Future Research	110
4.5.4 Conclusion.....	111
5 Study 3: How Organizations Foster Collective Boundary Control and What is in It for Them	112

5.1	Introduction	113
5.1.1	The Boundaries Between Work and Private Life Are Becoming Increasingly Blurred.....	113
5.1.2	Effective Boundary Management Is Becoming More and More Important: Employees Need Boundary Control.....	114
5.1.3	The Significance of Exploring Boundary Control at the Collective Level	116
5.2	A Multi-Level Framework on the Antecedents and Effects of Boundary Control	119
5.2.1	Competence-Enhancing HR Systems and Collective Boundary Control.....	120
5.2.2	Decentralization and Collective Boundary Control	122
5.2.3	The Effect of Collective Boundary Control on Organizational Performance	123
5.2.4	Boundary Control and Employee Health	125
5.2.5	The Moderating Role of Organizational ICT Usage.....	127
5.3	Methods.....	128
5.3.1	Research Setting and Sample.....	128
5.3.2	Measures.....	130
5.3.3	Estimate of the Measurement Model.....	134
5.3.4	Analytical Techniques	134
5.4	Results.....	135
5.4.1	Descriptive Statistics and Intercorrelations	135
5.4.2	Hypothesis Testing	138
5.5	Discussion.....	141
5.5.1	Theoretical Implications.....	141
5.5.2	Managerial Implications.....	142
5.5.3	Limitations and Directions for Future Research.....	143
5.5.4	Conclusion.....	144
6	Promoting Health and Performance in the Era of Constant Connectivity	145
6.1	Summary of the Research Results.....	145
6.1.1	The Influence of Executives' ICT Usage After Hours on Their Job Performance	146
6.1.2	Boundary Conditions at the Individual Level Influencing the Effects of Executives' ICT Usage After Hours.....	147
6.1.3	Executives' ICT Usage and Employees' Health.....	147

6.1.4	The Impact of Executives' ICT Usage on the Organizational States and Organizational Outcomes	148
6.1.5	Boundary Conditions at the Collective Level Influencing the Effects of Executives' ICT Usage After Hours.....	148
6.1.6	Antecedents and Effects of Boundary Control at Multiple Levels.....	148
6.1.7	An Integrative Consideration of the Study Results.....	149
6.2	Theoretical Contributions	150
6.2.1	Literature on Information and Communication Technologies.....	150
6.2.2	Research on Leadership.....	153
6.2.3	Literature on Boundary Management and Well-Being in Organizations	154
6.3	Implications for Management Practice	156
6.3.1	A Flexible and Connected New Working World versus A Working World of Constant Universal Availability and Exhaustion	156
6.3.2	Orchestrating ICT Use Through Digital Play Rules	158
6.3.3	Conscious Usage of ICTs Outside Regular Business Hours	158
6.3.4	Building a Culture of Boundary Control	160
6.3.5	Avoiding a Climate of Universal Availability.....	160
6.3.6	Promotion of Individual Resources and Reduction of Job Pressure: The Critical Role of Leadership.....	162
6.4	Limitations and Directions for Future Research.....	163
6.5	Conclusions and Outlook.....	165
	References.....	167
	Curriculum Vitae	194

List of Tables

Table 1.	Research questions derived from the literature review.....	41
Table 2.	Study 1. Means, standard deviations, and correlations.....	68
Table 3.	Study 1. Results of multiple regression analysis (I).	70
Table 4.	Study 1. Results of multiple regression analysis (II).	72
Table 5.	Study 1. Results of multiple regression analysis (III).....	74
Table 6.	Study 1. Results of multiple regression analysis (IV).....	75
Table 7.	Study 1. Indices of moderated mediation.	77
Table 8.	Study 1. Bootstrapping of conditional indirect effects.....	78
Table 9.	Study 2. Means, standard deviations, and correlations.....	103
Table 10.	Study 2. Results of multiple regression analysis.....	106
Table 11.	Study 2. Index of moderated mediation.....	107
Table 12.	Study 2. Bootstrapping of conditional indirect effects.....	107
Table 13.	Study 3. Means, standard deviations, and correlations.....	136
Table 14.	Study 3. Results of multi-level path analysis.	140

List of Figures

Figure 1. Survey responses on mobile tethering.	9
Figure 2. Survey responses on smartphone usage after hours.....	11
Figure 3. Approval rates on ICT usage questions by hierarchy level.	12
Figure 4. The job demands-resources model (Bakker & Demerouti, 2017).....	22
Figure 5. ICT usage after hours: Between empowerment and enslavement.....	25
Figure 6. Overview of the dissertation.....	48
Figure 7. Integrative research perspective.....	49
Figure 8. Study 1. The effect between a leader's after-hours work-related smartphone use and his or her job performance.	55
Figure 9. Study 1. Interaction of after-hours work-related smartphone use and polychronicity on work flexibility.....	70
Figure 10. Study 1. Interaction of after-hours work-related smartphone use and formalization on work flexibility.....	72
Figure 11. Study 1. Interaction of after-hours work-related smartphone use and job pressure on work flexibility.	74
Figure 12. Study 2. The conceptual model of the study	88
Figure 13. Study 2. Interaction of leaders' after-hours work-related smartphone use and employees' collective boundary control on the climate of universal availability.	105
Figure 14. Study 3. The conceptual model of the study.....	119
Figure 15. Study 3. Different data sources.	130
Figure 16. Study 3. Cross-level interaction of boundary control and organizational ICT use on individual well-being.....	139

List of Abbreviations

Δ	Delta
α	Cronbach's alpha
b / B	b-value / unstandardized regression coefficient
β	Beta-coefficient (standardized beta coefficient)
χ^2	Chi-square value
CEHRS	Competence-enhancing HR systems
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
df	Degrees of freedom
e-anxiety	Electronic communication-related anxiety
Ed. / Eds.	Editor / Editors
ed.	Edition
e.g.	Exempli gratia / for example
et al.	Et alii /and others
F	F-test value
HPWS	High performance work systems
HR	Human resource
ICC	Intra-class correlation coefficient
I-deal	Idiosyncratic deal
i.e.	Id est / that is
ICT	Information and communication technology

IFI	Incremental fit index
IKT	Informations- und Kommunikationstechnologien
ln	Natural logarithm
M	Mean
Max	Maximum
Min	Minimum
N	Number of observations
n.s.	Not significant
OEEM	Organizational expectations for email monitoring
p	p-value
p.	Page
r	Pearson product-moment correlation coefficient
R ²	Coefficient of determination
RMSEA	Root mean square error of approximation
r _{wg (j)} index	Within-group interrater reliability
SD	Standard deviation
SE	Standard error
SMEs	Small to medium-sized enterprises
SRMR	Standardized root mean square residual
TLI	Tucker-Lewis index
TMT	Top management team
t	t-test value
U.S.	United States of America
Vol.	volume

Executive Summary

Due to digitalization, the work-related use of information and communication technologies (ICTs) has increased steadily in recent years. Working anywhere and anytime has never been easier. A growing body of research is examining the impact of this development on employees and companies - and arriving at inconclusive findings. Also, several relevant questions remain unanswered. Against this background, this dissertation examines ICT usage after regular working hours by executives in studies 1 and 2. Study 3 focuses on boundary control, a central resource in the new world of work.

Study 1 shows that polychronic executives in formalized companies in particular benefit from work-related smartphone use after hours. They gain flexibility, which translates into increased work performance. Study 2 examines the impact of leaders' ICT use on employee well-being. It is shown that after-hours ICT use by leaders increases collective emotional exhaustion due to the climate of universal availability. This relationship is attenuated when employees' collective boundary control is high. Study 3 shows that competence-enhancing HR systems and decentralization are central antecedents of collective boundary control. Collective boundary control is positively linked to organizational performance. Individual boundary control, in turn, has health-promoting effects for the individual employee. In particular, employees in companies with a high degree of organizational ICT use benefit from boundary control.

Based on data from 24,233 employees from a total of 248 companies, the results underscore the significant role played by executives and HR management in the new world of work, not only in promoting performance but also health.

Zusammenfassung

Durch die Digitalisierung hat die arbeitsbezogene Nutzung von Informations- und Kommunikationstechnologien (IKTs) in den letzten Jahren stetig zugenommen. Arbeiten an jedem Ort und zu jeder Zeit sind so einfach wie nie zuvor. Die Auswirkungen dieser Entwicklung auf Mitarbeitende und Organisationen werden von einer wachsenden Anzahl von Studien untersucht – diese gelangen zu nicht eindeutigen Befunden. Auch bleiben viele zentrale Fragen unbeantwortet. Vor diesem Hintergrund beleuchtet die vorliegende Dissertation in den Studien 1 und 2 die IKT-Nutzung von Führungskräften. Studie 3 fokussiert auf Boundary Control, eine zentrale Ressource in der neuen Arbeitswelt.

Studie 1 legt dar, dass insbesondere polychrone Führungskräfte in formalisierten Unternehmen von der arbeitsbezogenen Smartphone-Nutzung ausserhalb regulärer Geschäftszeiten profitieren. Sie gewinnen an Flexibilität, die sich in eine erhöhte Arbeitsleistung übersetzt. Studie 2 untersucht die Auswirkungen der IKT-Nutzung durch Führungskräfte auf das Wohlbefinden der Mitarbeitenden. Es wird gezeigt, dass die IKT-Nutzung von Führungskräften nach Feierabend die kollektive emotionale Erschöpfung durch das Klima ständiger Erreichbarkeit erhöht. Dieser Zusammenhang wird abgeschwächt, wenn die kollektive Boundary Control der Mitarbeitenden hoch ist. Studie 3 zeigt auf, dass kompetenzfördernde HR-Systeme und Dezentralisierung zentrale Antezedenzien von kollektiver Boundary Control sind. Diese steht in einem positiven Zusammenhang zur Unternehmensleistung. Individuelle Boundary Control wiederum hat gesundheitsfördernde Effekte für den einzelnen Mitarbeitenden. Insbesondere Mitarbeitende in Unternehmen mit einem hohen Grad an IKT-Nutzung profitieren von individueller Boundary Control.

Die Ergebnisse, die auf Daten von 24'233 Mitarbeitenden aus insgesamt 248 Unternehmen basieren, unterstreichen die zentrale Rolle, die Führungskräfte und das Personalmanagement in der neuen Arbeitswelt spielen, und zwar nicht nur bei der Förderung von Leistung, sondern auch von Gesundheit.

1 The Interplay Between ICTs, Health, and Leadership in the New World of Work

1.1 Information and Communication Technologies in the New World of Work

1.1.1 New Forms of Working

The nature of work has changed remarkably in the last few decades and is still evolving steadily around the globe (Barley, Bechky, & Milliken, 2017). The most visible result of the transformation processes is increased *flexibility* (Kossek & Lautsch, 2018; Spreitzer, Cameron, & Garrett, 2017) which characterizes new work. This flexibility in the new world of work has multiple dimensions, which have been discussed frequently in the organizational behavior literature: First, flexibility regarding the employment relationship. Second, flexibility around the scheduling of work. And third, flexibility where work is accomplished (Spreitzer et al., 2017).

Whereas earlier employment relationships often lasted for a working lifetime, today's employment relationships are concluded for a shorter period – in some cases, only for a single task, a so-called “gig” (Spreitzer et al., 2017). In other words, employment relationships have become more flexible. Katz and Krueger (2018) show that alternative work arrangements in the United States (U.S.) increased from 1995 to 2015. The authors used this term to refer to those workers employed as “temporary help agency workers, on-call workers, contract workers, and independent contractors or freelancers” (p. 1). In 2015, 15.8% of all U.S. workers were in alternative work arrangements (in 2005, the figure was 10.7%). In the same year, 0.5% of the workforce in the country were employed in the gig economy, i.e., they offered services through online intermediaries such as Uber.

The proportion of those engaged in alternative employment relationships is even more significant in Europe, Japan, and Canada (Cappelli & Keller, 2013).

In Germany, atypical employment relationships are also on the rise (Crößmann & Günther, 2018): In 2019, 21% of the workforce was in atypical employment relationships. In 1995, the figure was 16% (Federal Statistical Office, 2020). Atypical employment relationships are similar to Katz and Krueger's definition of alternative work arrangements, including marginal employment, agency work, part-time employment, and fixed-term employment (Keller & Seifert, 2013). Whether self-employment is also a form of atypical employment is disputed (Keller & Seifert, 2013). If the self-employed are included in the atypical workforce, they would have constituted 25% of Germany's workforce in 2019 (compared to 22% in 1995) (Federal Statistical Office, 2020).

Flexible employment relationships help companies compete internationally by cutting costs and increasing efficiency (Keller & Seifert, 2013). On the other hand, employees appreciate the flexibility of specific new work arrangements, such as part-time workers and the self-employed (Keller & Seifert, 2013). For example, in Germany in 2016, only 11% stated that the main reason for their part-time employment was that they could not find a full-time job (Crößmann & Günther, 2018). Considering that this share was 22% ten years earlier, it is likely that increasingly more flexible employment relationships are chosen to satisfy personal needs (especially care activities for children or the elderly) (Crößmann & Günther, 2018). Concerning the self-employed, Petriglieri, Ashford, and Wrzesniewski (2019) found in a qualitative study that, on the one hand, independent workers struggle with existential anxieties. Still, on the other hand, they no longer want to do without the freedoms that this form of work offers. Interestingly, this study showed that the self-employed created their personal "holding environments" through different means (for instance, by focusing on an overarching purpose or establishing routines), which helped them deal with the tensions and stay productive.

How flexible a working relationship is designed is not only unilaterally determined by the respective organization. It can be observed in corporate practice that there is an increase in individually negotiated employment conditions, so-called “idiosyncratic working arrangements” (i-deals) (D. M. Rousseau, 2005). I-deals are described as “special terms of employment negotiated between individual workers and their employers (present or prospective) that satisfy both parties' needs” (D. M. Rousseau, Ho, & Greenberg, 2006, p. 977). Numerous employment features can be negotiated. To systematize these, Rosen, Slater, Chang, and Johnson (2013) identify four content domains across which employees negotiate i-deals: “schedule flexibility, location flexibility, task and work responsibilities, and financial incentives” (p. 709). Schedule and location flexibility are the second and third dimensions of new work arrangements.

Flexibility regarding work schedules occurs in both typical and atypical employment relationships (Spreitzer et al., 2017). An increasing number of employees have this autonomy allowing them to choose when and how long they work depending on their individual needs and preferences. In the U.S., in the years 2017 and 2018, 57% of employees have had flexible work schedules (U.S. Bureau of Labor Statistics, 2019). Data from the International Social Survey Programme 2015 show similar numbers in Germany: 62% of the men and 54% of the women surveyed were able to organize their working hours flexibly, at least to some extent. Especially people with a high level of education, employees in the middle age group (between 35 and 49 years), and parents who are responsible for young children value this flexibility (Bünning, 2018; U.S. Bureau of Labor Statistics, 2019). Those who had the opportunity to organize their working hours flexibly were significantly more satisfied with their work than those who did not have this opportunity (Bünning, 2018). One reason for this finding may be that flexible working hours reduce work-life stress levels because they allow people to fulfill better their different roles (Kossek & Lautsch, 2018). Survey data from German-speaking countries indicate that flexibility regarding working hours increased rapidly during the COVID-19 pandemic. For example, during

the first lockdown, 86% of respondents self-reported that they were able to work flexible hours (Bruch, Hesse, & Hölzl, 2021).

The third dimension of new work arrangements is flexibility regarding the place where work is performed (Spreitzer et al., 2017). In the past, work was usually conducted at the employer's facilities. Today, a rising share of employees undertake their work virtually at any place (Derks, van Duin, Tims, & Bakker, 2015). At a minimum, 25 to 45% of all U.S. employees do at least some work tasks electronically at home (Pew Research Center, 2015b; U.S. Bureau of Labor Statistics, 2019). 15% of U.S. workers reported in the years 2017 to 2018 they worked exclusively from home on some days (U.S. Bureau of Labor Statistics, 2019). In Germany, the share of employees who indicated they “sometimes” to “frequently” work from home was 11% in 2016 (Crößmann & Günther, 2018).

There is strong scientific evidence that working from home has several beneficial effects, such as higher performance levels, increased employee satisfaction, and lower turnover (Bloom, Liang, Roberts, & Ying, 2015). Further, it was found that telecommuting is positively related to autonomy and negatively to work-family conflict, role stress, and turnover intent (Gajendran & Harrison, 2007). However, it should be noted that the number of days employees spend in the home office is a critical boundary condition that influences the effects of telecommuting (Gajendran & Harrison, 2007; Golden & Veiga, 2005). A recent multi-method study with participants from an international industrial company showed that two to three days of working from home per week had the best effects on positive outcomes such as performance, well-being, and sleep quality (Fürstenberg & Bruch, 2022).

The COVID-19 pandemic has led to a sharp increase in virtual work, and these changes will also likely have long-term effects (Barrero, Bloom, & Davis, 2021). For instance, Microsoft's CEO Satya Nadella states that “over the past year, no area has undergone more rapid transformation than the way we work. Employee expectations are changing, and we will need to define productivity much

more broadly – inclusive of collaboration, learning, and well-being to drive career advancement for every worker, including frontline and knowledge workers, as well as for new graduates and those who are in the workforce today. All this needs to be done with flexibility in when, where, and how people work (Microsoft, 2021b, p. 4)."

During the height of the coronavirus pandemic in April 2020, 51% of the surveyed US workers reported that they would always work remotely (Gallup, 2020). Germany also saw a rapid change: According to data from the German Institute for Economic Research (DIW Berlin), the percentage of employees working from home rose from 12.5% before the pandemic to 35% in May 2020 (Schröder et al., 2020).

At the beginning of the pandemic, there was concern on the part of companies that productivity would decline when employees worked from home. This fear has often not been borne out, as shown, for example, by Microsoft's report on the new future of work: Objective data from development teams and knowledge workers reveal that their activity levels remained stable or amplified in the year 2020 compared to the time before the pandemic (Teevan et al., 2021). Self-reported data from 700 respondents in Germany who worked from their homes during the crisis also indicate that productivity and engagement did not decrease but, on the contrary, increased (Kunze, Hampel, & Zimmermann, 2021).

Employees also had positive experiences with the new work mode during the lockdown. A study from Germany, for example, has shown that, above all, the increased speed with which processes are implemented and flexibility concerning the place of work and working hours were perceived as positive (Bruch et al., 2021). This result coincides with data from Kunze et al. (2021), who found that 56% of those Germans who worked from home during the lockdowns would also like to work from home to a greater extent in the post-Corona period. In detail, the majority of respondents would like to work from home between two and three days (Kunze et al., 2021). In conclusion, more work will likely be done from home in the post-pandemic period. The extent to which

work is done from home in the post-Corona period can only be estimated. However, according to the approximations of 15,000 U.S. respondents, 25% of hours worked in the post-Corona era will be from home (Barrero et al., 2021).

A recent literature review (Kossek & Lautsch, 2018) stresses that the flexibility concerning time and place is stratified across occupations: Only a few workers in lower-level jobs benefit from flexibility where work is accomplished. Contrariwise, higher-level employees are more likely to work virtually. This result coincides with data from the German Federal Office of Statistics: Only 10% of employees in the lower-income third constantly worked from home. In the upper income third, by contrast, the figure was 63% (Kunze et al., 2021). In the post-Corona era, it can also be assumed that highly paid employees, in particular, will benefit from the flexibility to freely choose where to work (Barrero et al., 2021). There are also differences between industries: While only 24% of German employees from manufacturing and trade worked from home in 2020, 57% of employees in the service sector did. In addition, a positive correlation was found between flexible working and company size: Especially employees of larger companies (more than 500 employees) can work from home (Kunze et al., 2021). A similar picture emerges regarding the scheduling of work. Namely, lower-level employees have less discretion over their work scheduling than those higher in the organizational hierarchy (Kossek & Lautsch, 2018). It is essential to keep these differences in mind when thinking about employee effectiveness and health in the new world of work.

The rise of information and communication technologies (ICTs) is one of the main driving forces behind the changes in the way people do their work (Spreitzer et al., 2017). Without these technological advancements, the new flexibility would be hardly thinkable. For example, flexible working relationships in which employees work from home and at flexible working hours are often only possible because the employee in question is connected to the company at home or while on the move.

1.1.2 The Rise of Information and Communication Technologies

ICTs can be defined as “any electronic device or technology that has the ability to gather, store, or send information” (A. Day, Paquet, Scott, & Hambley, 2012, p. 473) and encompass, for example, smartphones, laptops, tablets, business communication platforms, email, and desktop computers. ICTs enable their users to carry out their work anywhere and at any time (Boswell & Olson-Buchanan, 2007). Therefore, ICTs are an essential cornerstone of the new flexibility. In addition, many of the new work arrangements, such as gig work, are only possible through digital technologies. Employers can stay in touch with their employees, assign and monitor tasks, and foster collaboration between their employees and stakeholders across any physical distance. Remote work is not only crucial for geographically dispersed employees. Even among co-located workers, virtual work becomes more and more common – (Spreitzer et al., 2017).

Therefore, scholars have noted that in “the current information age [...], ICT has come to the forefront” (B. Wang, Liu, & Parker, 2020, p. 695). In Germany, the majority of employees use ICTs at work (Tisch, Backhaus, Hartwig, Meyer, & Wischniewski, 2021): In 2019, 53% of employees primarily used a desktop computer for work, 19% a laptop, and 13% a smartphone or tablet (it was asked about the primary ICT used at work.). Managers used mobile ICTs more often than employees without personnel responsibility: For example, 24% of supervisors worked primarily with laptops compared to 17% of employees without personnel responsibilities. Smartphones or tables were the primary information and communication technology used by 14% of managers. This was the case for 12% of employees without management responsibility. It must be considered that these figures are representative of the German workforce and include all occupational groups, not only white-collar workers. A comparison between the occupational groups shows significant differences in the use of information and communication technologies (Tisch et al., 2021). For example, desktop computers were used frequently in business management and corporate governance

occupations (72%), business-related service occupations (74%), and medical and non-medical health occupations (68%). Desktop computers were used less frequently in construction occupations (24%), food and hospitality occupations (23%), and trade occupations (39%).

1.1.3 Work-Related Usage of Information and Communication Technologies After Hours

Both the handiness and reach of ICTs have improved significantly in recent years. Through virtual access options, mobile ICTs like smartphones and tablets, and faster internet connections, remote work has never been more accessible (Schlachter, McDowall, Cropley, & Inceoglu, 2018). Butts, Becker, and Boswell (2015, p. 763) write of a "new era of connectivity in the workplace" where employees can work virtually from anywhere and at any time. They further state that the boundaries between work and private life are becoming increasingly blurred. In fact, employees' connection to their company often does not end after regular business hours.

Results of a large-scale benchmarking survey in German companies with more than 12,800 respondents from over 94 companies in 2018 reveal that a sizable proportion of respondents maintain an ongoing connection with their company. The author of this dissertation analyzed the data, and a detailed description of the data set is given in the section "Methods" on page 63. Survey results are depicted in Figure 1 and Figure 2.

Figure 1 shows that 38% of respondents are constantly tied to their work via mobile ICTs like smartphones or laptops (i.e., those who agreed with the statement and those who strongly agreed). 35% state that a constant connection to work via digital media is normal for them. 57% of respondents can be reached by their colleagues or superiors via digital media at any time. Only 34% of respondents said they could not be reached via digital media at any time. The statement "I am always available for the organization via digital media (e.g., smartphone, laptop)" was agreed to by 45% of respondents.

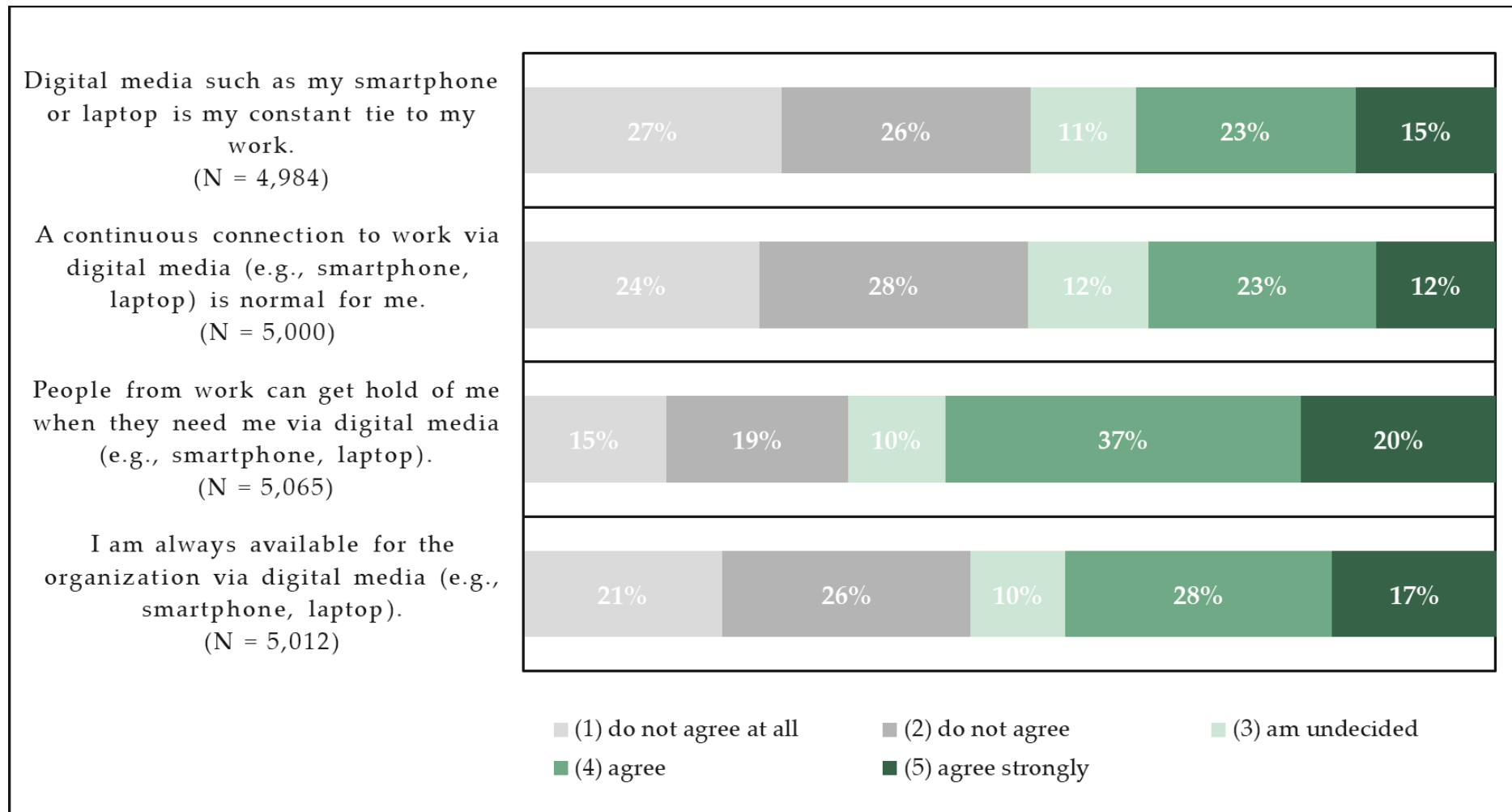


Figure 1. Survey responses on mobile tethering.

The survey also included questions on ICT usage after hours. Figure 2 shows the survey responses to four questions on work-related smartphone usage after regular business hours. Questions were drawn from Derks and Bakker's (2012) smartphone use scale. The graph reveals that 20% of respondents state that they use their smartphones heavily after hours for work. 21% of interviewees reported feeling obligated to respond to work-related messages after hours. 15% of respondents check their work-related emails until they go to sleep. 27% of respondents cannot resist checking new messages after hours when their smartphone blinks.

A deeper examination of the data reveals significant differences between executives and employees regarding ICT usage after hours (see Figure 3). The data show that executives report being constantly available via digital media more frequently than employees without management responsibility: 54% of managers reported that their smartphone or laptop was their constant connection to their work. In contrast, only 31% of employees said this. While 50% of managers consider a continuous connection to their work via digital media normal, only 30% of employees do. In addition, 68% of managers report that colleagues and supervisors can reach them at any time via digital media. Among employees, this is the case for only 52%. 61% of managers are always available for their organization via digital media. For employees, this share is 38%.

Furthermore, executives are significantly more likely to deploy their mobile phones for work-related matters after regular business hours: 36% of executives say they would use their smartphone intensively for work-related issues after work hours. Among employees, 14% state this. 30% of executives feel the need to reply to business-related communications on their smartphones after hours. Among employees, the figure was 18%. While 24% of executives check their work-related emails until they go to bed, only 11% of employees do so. 37% of executives cannot resist reading new business messages after hours when their smartphone displays them. Among employees, only 23% reported this.

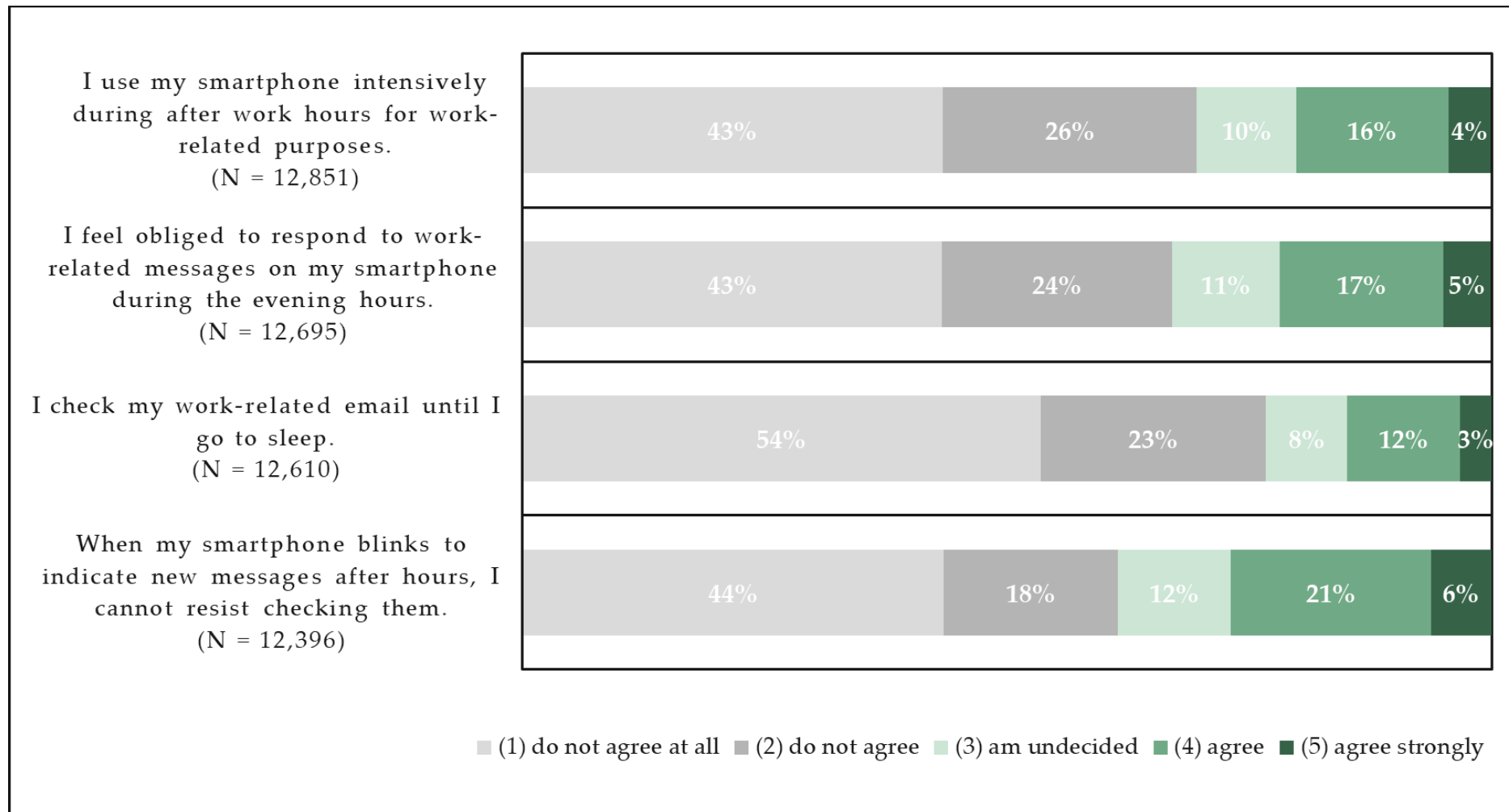


Figure 2. Survey responses on smartphone usage after hours.

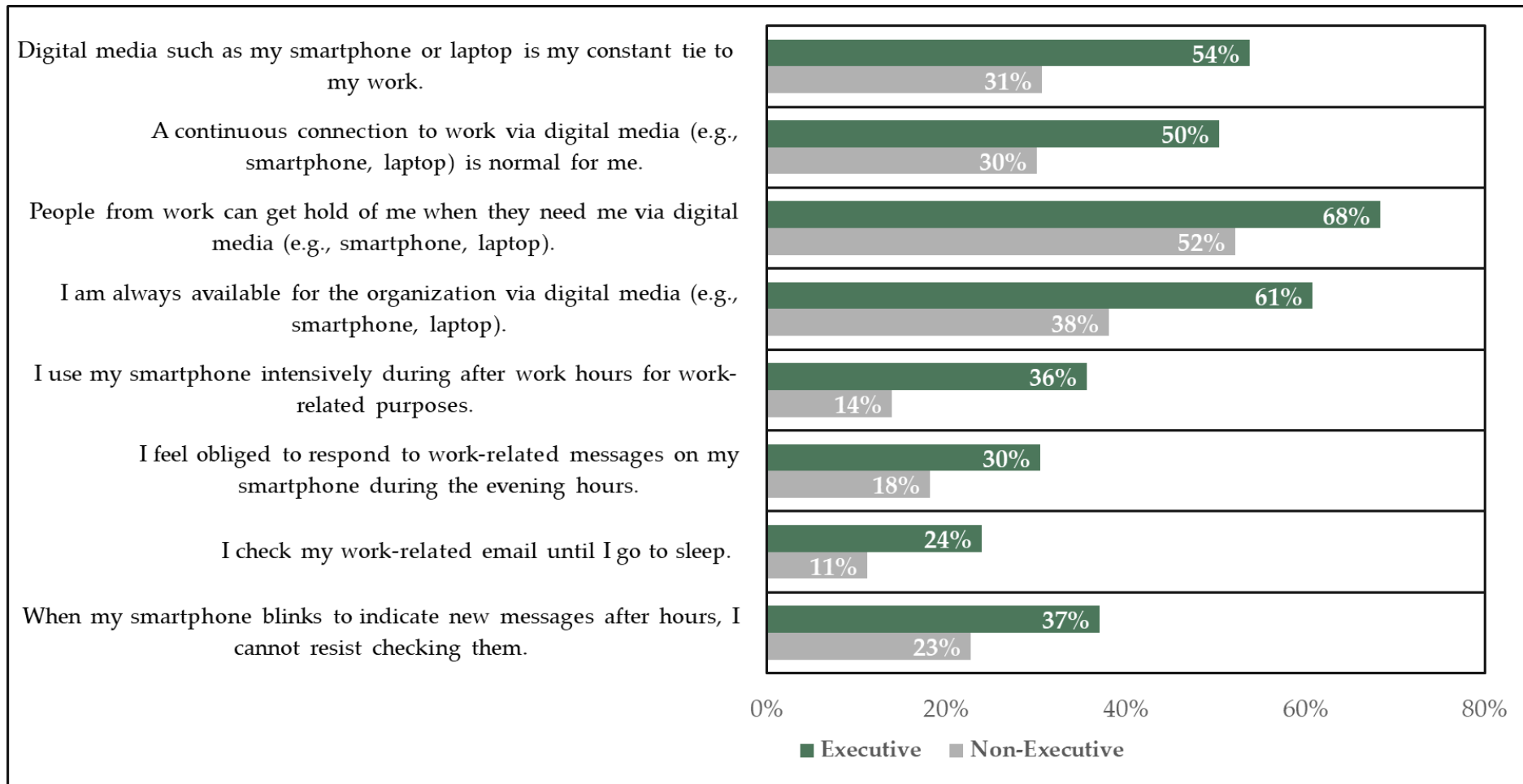


Figure 3. Approval rates on ICT usage questions by hierarchy level.

Evidence from other countries indicates that after-hours ICT use is a global phenomenon. For example, N. Zhang et al. (2021) report that it is customary in China to maintain electronic connections with work even after work hours. The authors refer to a recent survey as evidence (Xie, 2018), according to which only 2% of 985 surveyed employees never used ICTs after work. A survey by the American Psychological Association (2013) revealed that the majority of U.S. Americans check their work-related messages a minimum once a day before or after work throughout the week (52%), on weekends (53%) and also when they are home ill (54%). 44% said they read their work-related messages daily, even while on vacation.

Microsoft's new future of work report (Teevan et al., 2021) shows that ICT usage after hours increased during the COVID-19 pandemic. More messages were sent after 6 pm (+52%) and on weekends (+40%). This development contributed to people working longer hours on average. In the case of Microsoft's developers, the increase in working hours was 4.5%. Managers saw a 300% increase in instant messaging after hours. The number of meetings after hours increased by 25% for managers. Furthermore, the report shows that managers had lower satisfaction with their work-life balance from April to June 2020 than employees without leadership responsibilities.

Technological developments have led to a *new era of connectivity*, where employees can work from anywhere, at any time, in more flexible work arrangements (Butts et al., 2015; Spreitzer et al., 2017). The data show that these trends were amplified in the wake of the Corona pandemic (Teevan et al., 2021). The new situation has eroded the former lines between professional and personal life: Current empirical findings show that a considerable proportion of workers, especially those in managing positions, can be reached outside regular working hours. These developments in practice are accompanied by several studies that examine ICT usage after hours (a detailed review of the literature is provided in section 2.2).

The scientific evidence to date indicates that the handling and use of ICTs influence the well-being of users (B. Wang et al., 2020). On the one hand, the new technologies offer many opportunities (a detailed discussion of these takes place in section 2.2.2), but on the other hand, they also pose risks to the well-being of the respective users. The blurring of boundaries between the work and the private sphere is often accompanied by reduced levels of well-being (Kossek, 2016). For instance, studies showed that the work-related usage of ICTs after hours interferes with the individual recovery process, a significant predictor of well-being (Sonnentag, Binnewies, & Mojza, 2008). Moreover, it was revealed that people who intensively use their ICTs for work-related purposes after hours have difficulties detaching from work (Belkin, Becker, & Conroy, 2020; Y. Park, Fritz, & Jex, 2011). Therefore, it is not surprising that ICT use outside regular business hours might come along with amplified stress levels, diminished psychological well-being, and higher sickness absence (Schlachter et al., 2018). These consequences pose a severe challenge for companies, as employee well-being plays an essential role from both a business and an ethical perspective.

1.2 Health in Organizations – Significant from both an Economic and Ethical Perspective

Securing employees' well-being and health is an essential objective for many companies (Rudolph, Murphy, & Zacher, 2019). And there is a strong business case for this: The link between employee health and performance has been demonstrated in various studies both at the individual level (Ford, Cerasoli, Higgins, & Decesare, 2011; T. A. Wright & Cropanzano, 2000); and at the collective level (Barrick, Thurgood, Smith, & Courtright, 2015; Hüttermann & Bruch, 2019). At the individual level, the meta-analytic findings of Ford et al. (2011) of 111 studies show that mental health is moderately to strongly correlated with job performance. Physical health was weak-to-strong correlated with work performance. At the collective level, it was demonstrated that aggregated emotional exhaustion is negatively linked to organizational performance in terms of

client satisfaction and productivity and positively linked to personnel costs (Taris & Schreurs, 2009). Barrick et al. (2015) consider the effects of the counterpart of collective emotional exhaustion, namely collective organizational engagement, “the shared perceptions of organizational members that members of the organization are, as a whole, physically, cognitively, and emotionally invested in their work” (p. 113). They find that collective engagement has a positive effect on company performance.

In addition, organizations also have a responsibility to society when it comes to the health management of their employees. However, data from Goh, Pfeffer, and Zenios (2016) show that organizations are failing to live up to this responsibility: They find “that more than 120,000 deaths per year and approximately 5% – 8% of annual healthcare costs are associated with and may be attributable to how U.S. companies manage their workforces” (p. 608). Therefore, the authors “suggest that more attention should be paid to management practices as important contributors to health outcomes and costs in the United States” (p. 608).

It is essential to mention that the concept of health and well-being here and in the organizational behavior literature in general is more than the mere absence of disease (Rudolph et al., 2019). “Mental health is conceptualized ... as a continuum of neurophysiological and cognitive states related to thinking, mood and emotion, and behavior” (Montano, Reeske, Franke, & Hüffmeier, 2017, p. 329). On one side of the continuum are negative health states and diseases. On the other side, however, are positive mental health states which “can be defined as complete psychological functioning, that is, the ability and capacity to flourish, a positive sense of well-being, and the ability to cope with everyday or stressful life situations” (Montano et al., 2017, p. 330).

Companies have various levers at their disposal to promote employees' health in the age of constant availability; one important lever is leadership. A current definition that takes into account the complexity of the construct is provided by

Fischer, Dietz, and Antonakis (2017, p. 1727), who describe leadership as a “social and goal-oriented influence process, unfolding in a temporal and spatial milieu. In this process, leadership variables (e.g., a leader’s behaviors) affect a distal outcome (e.g., team performance) through more proximate mediating constructs, such as follower motivation.” In addition, the authors note that “the term leadership implies that a leader has a greater impact on a single follower than vice versa” (p. 1727). The influence of leaders on followers’ health will be elaborated on in the next section.

1.3 Leadership Gains Importance in the New World of Work

Previous evidence indicates that leadership is a significant occupational health factor (Halbesleben, 2006; Montano et al., 2017; Rudolph et al., 2019) and that leadership is becoming more critical in the digital age (Larson & DeChurch, 2020). On a more abstract level, leadership is thought of as a “higher-order job resource” that impacts employees’ job resources and job demands through various mechanisms (Tummers & Bakker, 2021, p. 7). The influence of executives on employee health has been examined at multiple levels and in terms of different outcomes. The findings show that leaders play an essential role in promoting employee health.

At the organizational level, research found that transformational leadership positively affects collective well-being in organizations. Leaders with this style transform their employees’ self-interests into collective goals to stimulate “performance beyond expectations” (Bass, 1985). Barrick et al. (2015) find that CEO transformational leadership is positively linked to collective engagement. Similarly, Hüttermann and Bruch (2019) revealed that HRM practices with a health focus are positively related to collective engagement via employees’ stress mindset. Moreover, this study found that this relationship depends on the transformational leadership climate in an organization. In addition, it was shown that transformational leadership at a collective level is negatively linked to both a cynical organizational climate and cynicism at the individual level (DeCelles,

Tesluk, & Taxman, 2013). Along with exhaustion and inefficacy, cynicism is one of the three dimensions of burnout (Maslach, Schaufeli, & Leiter, 2001).

At the dyadic level, Montano et al. (2017) examined meta-analytically how different leadership constructs are related to several health outcomes of followers. They find that transformational leadership, the leadership styles consideration and initiating structure (Fleishman, 1953), and a high-quality leader-member exchange (LMX) (Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016) have health-promoting effects. Destructive leadership (Schyns & Schilling, 2013; Tepper, 2000), on the contrary, has a strong health-damaging impact on followers.

An essential mechanism through which leadership impacts well-being is the leader's role modeling function (Rudolph et al., 2019). Executives are agents representing the organization (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002) who enact (or do not enact) through their behaviors, policies, practices, and expectations (D. V. Day, Griffin, & Louw, 2014). Thus, they have a signaling effect on their followers regarding desired behaviors. The importance of the role model function of leaders is also reflected in the different leadership styles: For example, the first dimension of transformational leadership is referred to as *idealized influence* and denotes "leaders who act as strong role models for followers" (Northouse, 2013, p. 191). Likewise, in the concept of "health-promoting leadership," the leader's *self-care* is the basis for promoting the health of subordinates (Franke, Felfe, & Pundt, 2014).

Up to this point, it has been shown that the way people work together in today's world is changing drastically. The main driver of this change is the increasing use of ICTs both during and after regular business hours. Research to date suggests that this trend is impacting well-being in organizations. From both a business case and ethical perspective, it is in the interest of organizations to promote the health of their workforce. Leaders represent an essential lever for companies to boost employee health. Through their behavior, the health of the people led

can be fostered, and the potential of information and communication technologies can be exploited. Hence, it is evident that information and communication technologies, health, and leadership are vital issues in the new world of work. The right interplay of these factors is crucial when it comes to navigating successfully through the era of constant availability. While the research to date provides initial indications, many questions remain unanswered about the interplay between ICTs, executives, and health in the company (B. Wang et al., 2020). Therefore, the overarching research question of this dissertation is:

How can the potential of the new flexibility through ICTs be used to promote both performance and well-being in organizations?

The specific research questions that this dissertation explores are presented compactly in the following section. A detailed discussion of the gaps in the literature to date is provided in section 2.3.

1.4 Research Questions

Given the intensive use of ICTs by many managers after hours, the question arises as to whether this behavior is beneficial or detrimental to their respective job performance. Unfortunately, available studies give no clear answer, as two shortcomings characterize them. Firstly, studies on the consequences of work-related ICT use after hours have produced mixed results (Schlachter et al., 2018). Secondly, previous research on ICT use has focused primarily on employees without managerial roles (B. Wang et al., 2020). Hence, *research question 1* asks *how executives' ICT usage affects their job performance*. Echoing Schlachter et al.'s (2018, p. 825) call to examine “mechanisms and moderating influences regarding” the effects of ICT usage after hours, *research question 2* asks *under what conditions executives can exploit the potential of ICTs after hours*.

Since studies on “[leaders’ ICT usage] are absent” (B. Wang et al., 2020, p. 716) there have been no studies thus far investigating the impact of work-related ICT use by executives after regular business hours on employee health. However,

previous studies have shown the relevance of leaders to employees' well-being (Montano et al., 2017). Therefore, the *third research question* asks *how executives' after-hours ICT usage affects employees' health*.

Furthermore, organizational norms related to communication technologies have been shown to influence employees' ICT usage and well-being (Schlachter et al., 2018). Despite the importance of leaders in shaping such norms and organizational expectations, this influence has not yet been studied (B. Wang et al., 2020). In addition, organizational norms and climates are inherent organizational-level constructs. Nevertheless, previous research has analyzed them only at the individual level (W. J. Becker, Belkin, Conroy, & Tuskey, 2021; Belkin et al., 2020; Fenner & Renn, 2010; Y. Park et al., 2011; Piszczek, 2017; Richardson & Benbunan-Fich, 2011). Therefore, *research question 4* asks *what impact leaders' ICT usage has on organizational norms and outcomes*.

Related to the previous two research gaps, there is no research on boundary conditions at the collective level, which influence the effects of executives' ICT usage after hours on employees' well-being. Hence, *research question 5* asks *which boundary conditions influence the effects of leaders' ICT usage after hours on employees' well-being*.

According to the reading of boundary theory (Ashforth, Kreiner, & Fugate, 2000), work-related ICT use after hours may trigger a micro transition, namely from a non-professional role to a work-related role (private-to-work change). If a person perceives that he or she has "control over how (he or she) manages the boundaries between work and family life" (Kossek & Lautsch, 2012, p. 161), he or she has a high level of *boundary control*. Positive effects of this construct on individual-level outcomes were demonstrated in several studies (e.g., Hesse & Bruch, 2021; Kossek, Ruderman, Braddy, & Hannum, 2012; Piszczek, 2017). However, it remains unclear whether these results translate to the collective level and how the organizational context influence individual-level effects of

boundary control. Therefore, *research question 6 asks what the antecedents and performance implications of collective boundary control are and how organizational context shapes the effects of individual boundary control on an employee's health.*

The following chapter lays the theoretical foundation for the subsequent studies. To this end, the first step is to position the concept of after-hours ICT usage and to take stock of current research. Research gaps are derived from the literature review, and intended contributions are outlined. A description of the methodological approach and an overview of the dissertation follows.

2 Great Research Interest but Many Open Questions: A Theoretical Look at Work-Related ICT Use After Hours

2.1 Positioning the Concept and Theoretical Relevance of After-Hours Work-Related ICT Usage

“People design and use technology for work. In return, technology shapes work and people.”

(B. Wang et al., 2020, p. 695).

A steadily rising body of research examines the impact of work-related ICT use after hours on employees. Individual ICT use is defined here as “an individual user’s employment of one or more features of ICT to perform a task” (Burton-Jones & Straub, 2006, p. 231). B. Wang et al. (2020, p. 698) state there are two elements of ICT use: First, “the extent to which the user employs ICT [ICT use intensity]” and second, “the ways ICT is used to carry out tasks [functions of ICT use].” Thus, after-hours work-related ICT usage means ICT use outside regular business hours for work purposes at an unspecified time or day of the week.

Researchers in the field heavily draw from theories of work design (Grant & Parker, 2009; Parker, Morgeson, & Johns, 2017) and, in particular, the job demands-resources model (Bakker & Demerouti, 2017) to explain the effects of ICT usage after hours on employees’ health and effectiveness.

2.1.1 A Look at After-Hours Work-Related ICT Usage from the Job Demands-Resources Perspective

2.1.1.1 Job Demands-Resources Model

The job demands-resources model was published in 2001 (Demerouti, Nachreiner, & Schaufeli, 2001) and has since served as the theoretical basis of

countless empirical studies conducted across various occupations (Bakker & Demerouti, 2017). The model (shown in Figure 4) can be used to explain different dimensions of individual well-being and job performance.

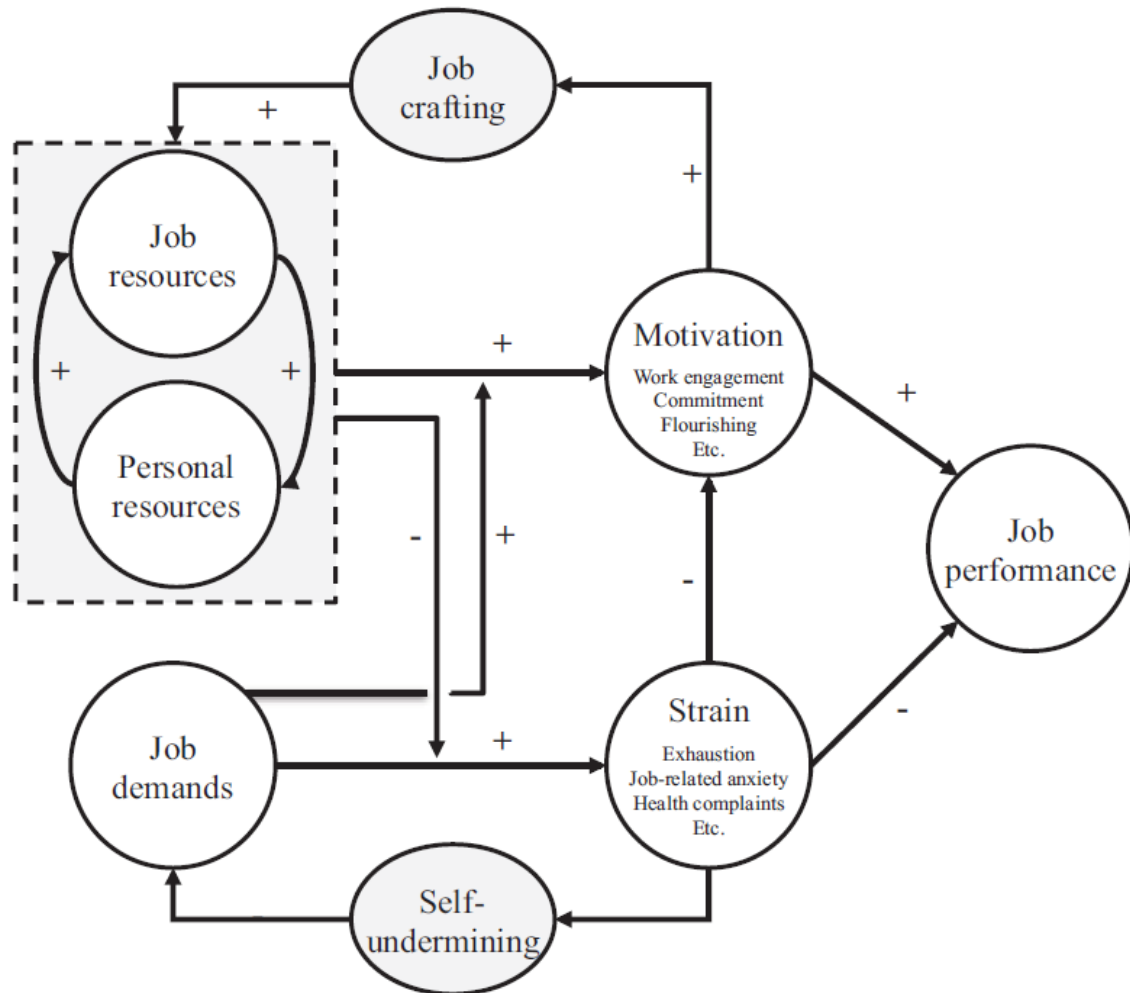


Figure 4. The job demands-resources model (Bakker & Demerouti, 2017).

The job demands-resources model states that all kinds of job characteristics can be placed in one of the two categories: job resources and job demands (Bakker & Demerouti, 2017). Job demands relate to “those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs” (Bakker & Demerouti, 2017, p. 274). Job resources, in contrast, are understood as “those physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals, reduce

job demands and the associated physiological and psychological costs, or stimulate personal growth, learning, and development” (Bakker & Demerouti, 2017, p. 274). The model shows that there are personal resources in addition to job resources. They refer to “the beliefs people hold regarding how much control they have over their environment” (Bakker & Demerouti, 2017, p. 275).

Furthermore, the job demands-resources model states that job demands and job resources trigger two distinctive processes. First, the model posits that demands in the work context lead to a stress response in employees, which is related to outcomes such as emotional exhaustion (Bakker & Demerouti, 2007). It has been empirically shown that quantitative (including high workload and emotional work) and qualitative demands (including paradoxical demands such as role conflict) lead to emotional exhaustion (Maslach et al., 2001). Furthermore, the model states that emotional exhaustion, in sequence, is negatively related to employee job performance. This proposed relationship has been confirmed by previous studies (Taris, 2006). Job resources (e.g., autonomy and performance feedback), on the other hand, trigger a motivational process that leads to engagement on the part of the employee. Engagement is a driver of job performance (Bakker & Demerouti, 2017).

In addition, the model states that job resources moderate the association between job demands and exhaustion in such a way that the effects are buffered. Employees who have access to sufficient job resources are better able to manage the challenges of their jobs. Moreover, the model also shows a moderation effect in the other direction. Job demands strengthen the effect of job resources on engagement. Accordingly, the impact of job resources on engagement is most substantial when job demands are high. An important implication of the job demands-resource model is that both job demands and job resources should be balanced to produce positive outcomes (Bakker & Demerouti, 2007).

More recently, in addition to the discussed effects, reverse causal effects have been detected between job resources and motivation and between job demands and strain (Bakker & Demerouti, 2017). The job demands-resources model takes

this into account by inserting two additional paths. The first additional path describes the relationship between engagement and job resources. It was found that engaged individuals increase their job resources through job crafting behaviors. Job crafting is defined “as the physical and cognitive changes individuals make in the task or relational boundaries of their work” (Wrzesniewski & Dutton, 2001, p. 179). An example would be an engaged employee actively asking for feedback (Bakker & Demerouti, 2017). Accordingly, the new model includes a gain spiral demonstrating that job resources and engagement can be mutually reinforcing.

The second additional path describes the reciprocal relationship between exhaustion and job demands. Exhausted employees are likely to create other job demands through self-undermining behavior, which defines “behavior that creates obstacles that may undermine performance” (Bakker & Costa, 2014, p. 115). Bakker and Demerouti (2017) cite exhausted employees who communicated poorly, made mistakes and fueled conflict, which increased their job demands. Therefore, the model includes a loss spiral that shows the mutually reinforcing association between job demands and exhaustion.

2.1.1.2 ICT Usage After Hours: Both a Job Demand and a Job Resource

The job demands-resources model assumes that any job characteristic can be placed in the abovementioned categories: job resources and job demands. However, there are good reasons for classifying work-related ICT usage after hours in both one and the other category.

On the one hand, work-related ICT use after hours is a job resource as mobile ICTs make it now possible, for instance, to reply to work-related messages in any location at any time (Piszczek, 2017). These opportunities increase individual autonomy, which according to the job demands-resources model, leads to higher engagement and thus higher job performance. Work-related ICT use after hours can also mitigate the detrimental health effects of job demands. For example, a manager could better time his or her heavy workload by answering

some work-related messages after hours. As a result, he or she can schedule his or her workload according to his or her needs, regardless of office hours.

On the other hand, work-related ICT use after hours can be a job demand. Being available for work-related matters all the time can reduce perceived autonomy and control because employees feel tethered to work (Jarvenpaa & Lang, 2005). The feeling of being constantly available, in turn, could result in a stress response that leads to exhaustion. Emotionally exhausted employees, in turn, have great difficulty achieving their professional goals (Taris, 2006).

These examples show the paradoxical nature of using ICTs after regular business hours, making it impossible to draw straightforward conclusions. Jarvenpaa and Lang (2005) used the term *empowerment/enslavement paradox* to describe the tensions associated with ICT usage after hours (see Figure 5). Mazmanian, Orlikowski, and Yates (2013) used the similar term *autonomy paradox*. Paradoxes, in general, are defined as “contradictory yet interrelated elements that exist simultaneously and persist over time” (Smith & Lewis, 2011, p. 382). Applied to the use of ICTs after hours, it is argued that ICT use after hours increases flexibility or autonomy and undermines it simultaneously.

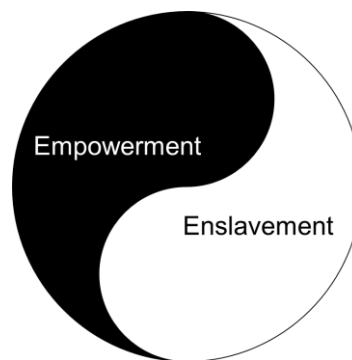


Figure 5. ICT usage after hours: Between empowerment and enslavement

2.1.2 After-Hours ICT Usage and Boundary Theory

Another perspective on the work-related use of ICTs is provided by boundary theory. This theory, which has its roots in the role theory (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), has been invoked more frequently in recent years to

explain the interplay between individuals' work and private lives (Allen, Cho, & Meier, 2014).

"Boundary theory focuses on the ways that people create, maintain, or change boundaries in an effort to simplify and classify the world around them" (Allen et al., 2014, p. 101). As the name implies, the theory is about boundaries which can be of physical, behavioral, emotional, and cognitive nature (Allen et al., 2014; Kossek, 2016). Those boundaries define peoples' work and private domains and vary from thick to thin boundaries (Ashforth et al., 2000). For example, workers whose boundaries are relatively thick (i.e., they separate the work from the private sphere) have an easier time detaching from work (Kossek, 2016). On the other hand, workers whose boundaries are rather thin (i.e., the work and the private role are overlapping) have the opportunity to switch quickly between roles (Ashforth et al., 2000). Allen et al. (2014, p. 101) note in this regard that "roles tend to be bounded in space and time, in that they are more relevant within specific locations and at specific times of the day and the week."

People frequently switch between the work and the private sphere (Allen et al., 2014). These switches are referred to as *transitions* in boundary theory. With *flexibility* and *permeability*, two dimensions of boundaries can be identified which affect those transitions (Ashforth et al., 2000). Flexibility is defined as "the degree to which the spatial and temporal boundaries are pliable" (Ashforth et al., 2000, p. 474). For example, an IT consultant's highly flexible work role can be performed at numerous locations and at varying times. On the other hand, less flexible work roles (for instance, that of a parking attendant) can only be carried out at certain times and places. Permeability is defined as "the degree to which a role allows one to be physically located in the role's domain but psychologically and/or behaviorally involved in another role" (Ashforth et al., 2000, p. 474). For example, the parking attendant mentioned above may be physically on-site during his night shift but mentally not because he is thinking about a conflict with his son the day before. On the other hand, the IT consultant, who

receives and reads an email from his training partner while in the office, is both mentally and behaviorally engaged in his role as a friend while physically involved in his work role. In general, “strong (boundaries) are impermeable and inflexible and do not allow blending” (Allen et al., 2014, p. 102), whereas weak boundaries are permeable and flexible so that roles can become blurred.

According to the reading of boundary theory, work-related ICT use after hours may trigger a micro transition, namely from a non-professional role to a work-related role (private-to-work change). For one thing, this is only made possible by flexible and permeable boundaries. On the other hand, the boundaries themselves are shaped by work-related ICT use after hours. Furthermore, Allen et al. (2014) note that “boundaries are also influenced by [...] the degree that objects and the ambient surroundings are similar” (p. 102). Regarding smartphone use, this means that professional and private use of the same smartphone contributes to the dissolution of professional and non-professional boundaries. The blurring of boundaries is even more pronounced when the smartphone is used for private and work-related purposes at one's home. Accordingly, boundary theory can also explain the empowerment/enslavement paradox described in the section before (2.1.2).

2.2 ICT Usage After Hours for Work Purposes: A Literature Review

The growing use of ICTs after hours and the difficult-to-predict impact of this development have led to an increase in studies in this area (B. Wang et al., 2020). To outline the development of the research field, the literature review follows the article of Schlachter et al. (2018) in structuring the findings. Therefore, the review first addresses antecedents of ICT use after hours. Following Schlachter et al. (2018), a distinction is made between causes that are attributed to the “social-normative organizational context” and causes that are subordinated to “person characteristics.” Subsequently, the paradoxical nature of after-hours ICT use will be stressed by first addressing the positive as well as the negative

sides. The fact that there are both beneficial and detrimental impacts of ICT usage after hours on employees' well-being and performance suggests that moderators influence the effects (B. Wang et al., 2020). Therefore, previously investigated moderators are brought to light. At the beginning of each section, the findings of Schlachter et al. (2018) are first briefly reflected on as a starting point. The further development of the research is shown directly afterward.

2.2.1 Antecedents of ICT Usage After Hours

2.2.1.1 Organizational Context as Antecedent of ICT Usage After Hours

Schlachter et al. (2018) show that the social-normative context significantly influences whether employees use their ICTs for work purposes after hours. The influence of context is demonstrated by both qualitative (e.g., Barley, Meyerson, & Grodal, 2011; Cavazotte, Heloisa Lemos, & Villadsen, 2014; Matusik & Mickel, 2011; Mazmanian, 2013; Mazmanian et al., 2013; Schlosser, 2002) and quantitative studies (e.g., Fenner & Renn, 2010; Y. Park et al., 2011; Richardson & Benbunan-Fich, 2011). The review by Schlachter and colleagues further highlights that employees deduce from specific contextual cues whether constant accessibility is required. A quantitative study found that the distribution of mobile devices to employees is positively linked to ICT usage after hours (Richardson & Benbunan-Fich, 2011). Qualitative research identified colleagues who work long hours and workplaces that value immediacy and commitment (Mazmanian et al., 2013) as essential cues. In addition to these cues, some companies explicitly ask their employees to be available after hours for work-related purposes (Kreiner, 2006).

Furthermore, previous studies revealed that behavior in accordance with the normative context (in this case, the use of ICT after hours) reinforces such a context (i.e., an environment in which employees are constantly available). For instance, Mazmanian et al. (2013) studied the ways knowledge professionals used their mobile e-mail devices. They found that users "were enacting a norm of

continual connectivity and accessibility,” which, on the one hand, “offered these professionals flexibility, peace of mind, and control over interactions in the short term.” But on the other hand, it “intensified collective expectations of their availability, escalating their engagement and thus reducing their ability to disconnect from work” (p. 1337).

W. J. Becker et al. (2021) found a positive effect of organizational norms to monitor work-related e-mails (OEEM) after hours on the time employees spend on e-mails after hours and smartphone use in general. Furthermore, the study examined the influences of these norms on both the mental well-being and relationship satisfaction of workers and their life partners. The authors showed that such norms lead to electronic communication-related anxiety (e-anxiety), which the authors explain by attention allocation conflicts. E-anxiety, in turn, harms employee health. Mixed findings were found for the association between e-anxiety and relationship satisfaction. Furthermore, the authors' hypothesis could be confirmed that organizational norms to monitor work-related e-mails after hours do not only negatively influence the respective employee themselves but also the well-being and relationship satisfaction of their life partner, as the e-anxiety is transmitted.

These findings are in accordance with Belkin et al. (2020), who test, among other aspects, whether OEEM actually increases the quantity of the time that employees spend on email outside of their regular business hours. Their data show that those employees who perceive strong expectations behave in concurrence with them (i.e., they spend more time on e-mails after hours). Furthermore, the authors find that OEEM are positively related to emotional exhaustion and negatively linked to work-life balance.

In summary, the new findings confirm the significant role of organizational norms for after-hours ICT use. Moreover, they indicate that these norms negatively affect employees' mental health and relationship qualities and those close to them. Interestingly, the adverse effects cannot be explained by more signifi-

cant involvement in after-hours work alone. Instead, organizational norms represent an autonomous job demand that negatively influences employees through various psychological mechanisms (e.g., e-anxiety [W. J. Becker et al., 2021] and lower work detachment [Belkin et al., 2020]).

2.2.1.2 Person Characteristics as Antecedents of ICT Usage After Hours

The work-related use of ICTs after hours is not only explained by the organizational context but also by individual preferences. Schlachter et al. (2018) distinguish between “individual preferences, motives, and reflections of voluntary ICT use” (p. 830).

Concerning personal preferences, qualitative studies show that the individual will to use ICTs even after regular business hours plays an important role (Schlachter et al., 2018). This finding is in line with boundary theory (Ashforth et al., 2000; Kossek, Lautsch, & Eaton, 2005; Kreiner, Hollensbe, & Sheep, 2009) which states that people have different boundary management preferences. Whereas some prefer to integrate the work and private roles (i.e., so-called “integrators”), others prefer to separate both domains (these are known as “segmenters”) (Kreiner et al., 2009). Empirical research has supported this assumption by showing that a preference for integration is an antecedent of work-related ICT usage after hours (Schlachter et al., 2018). A preference for segmentation, in contrast, is negatively linked to ICT usage after hours (Adkins & Premeaux, 2014). Schlachter et al. (2018) emphasize that the use of ICTs has the potential to become a permanent habit or even a compulsion. Therefore, self-discipline to act according to one's preferences also plays a key role. In addition, scholars have found that attitudes toward ICTs influence their use. Those who perceived ICTs as helpful for their performance used them more frequently (Schlachter et al., 2018).

Finally, employees' motives are essential determinants of ICT usage after hours. For instance, Boswell and Olson-Buchanan (2007) revealed that job involvement and ambition were positively related to ICT usage after hours. However, the

authors did not find a statistically significant relationship between affective commitment and ICT usage after hours. A positive association between job involvement and ICT usage after hours is also shown in the study of Y. Park et al. (2011). The findings suggest that ambitious employees in particular use ICTs for work-related purposes after hours because they are deeply dedicated to their jobs. Furthermore, the qualitative studies indicate that not only those who are exceptionally engaged use their ICT for work-related purposes after work but also those who want to seem particularly committed (Schlachter et al., 2018).

2.2.2 The Bright Side of ICT Usage After Hours

The literature review of Schlachter et al. (2018) shows that scholars have studied the association between ICT usage after hours on the one hand and flexibility and control on the other hand. They found in various qualitative studies that ICT usage after hours is associated with a sense of increased control and flexibility (e.g., Cavazotte et al., 2014; Mazmanian et al., 2013; Middleton & Cukier, 2006). For instance, Mazmanian et al. (2013, p. 1341) professional workers “used their mobile email devices to be continually connected, thus managing their commitment to others by staying in touch with the flow of communication, while also buffering their availability, thus increasing their autonomy by choosing whether, when, and where to respond to the communication.” Furthermore, Richardson and Thompson (2012) found a positive relationship between ICT usage after hours and job control in their quantitative study. In addition, Schlachter et al. (2018) highlight that flexible working conditions can foster the usage of ICTs after hours, suggesting that flexibility and the use of ICTs after work for business purposes reinforce each other.

Furthermore, Schlachter et al. (2018) highlight that the effects of ICT usage after hours on performance have been examined too. Qualitative studies showed that employees reported working more efficiently, which benefited their performance. Examples cited include commute and wait times, where employees can still be productive through mobile technologies. Quantitative evidence from an

as-yet unpublished study also suggests that using ICTs after hours increases performance (Fender, 2010).

Finally, previous research has shown that ICT usage after hours can have beneficial effects on employees' work-life balance (Schlachter et al., 2018). One reason for this is that the work-related use of ICTs after regular business hours makes it easier to balance work and private life (Currie & Eveline, 2011). One example of increased work-life flexibility through ICT usage after hours is the salesperson who can spend time with his or her family without fear of missing a meaningful order. Moreover, Derks, Brummelhuis, Zecic, and Bakker (2014) did not find differences in experienced work-home interference between those who used their smartphones for work-related matters after work and non-users.

2.2.3 The Dark Side of ICT Usage After Hours

Although previous evidence indicates that using ICTs outside working hours increases individual flexibility and control, some studies find the opposite or no effects (Schlachter et al., 2018). For instance, Ward and Steptoe-Warren (2014) did not find that job control was increased when employees used their Blackberries for work-related matters after hours. Barley et al. (2011) describe the pressure caused by e-mails. Their mixed-methods study shows that the expectation that e-mails would be answered quickly restricts personal autonomy and leads to stress.

Furthermore, Schlachter et al. (2018) report that through the use of ICTs during the non-work time, an increase in job demands occurs. These increased job demands are expressed in the form of work extension (working longer hours) and work intensification (higher workload because of being always available) (e.g., Barley et al., 2011; Boswell & Olson-Buchanan, 2007; Cavazotte et al., 2014). In addition, Adkins and Premeaux (2014) found a positive effect of working longer hours on ICT usage after hours, suggesting that the two phenomena reinforce each other.

A decrease in flexibility and increased job demands are related to another outcome that ICT use after hours for work purposes can bring, namely work-life conflict. Through information and communication technologies, work can invade the family sphere and vice versa. Work-life conflict occurs “when the energy, time, or behavioral demands of the work role conflicts with family or personal life roles” (Kossek & Lee, 2017). Qualitative studies indicate that work-related ICT usage after hours is associated with blurred boundaries by employees and the “feeling that work never ends” (Schlachter et al., 2018, p. 831). Quantitative studies, on the other hand, find statistical effects of work-related ICT usage after regular business hours on work-life conflict. For instance, Boswell and Olson-Buchanan (2007) find a positive association between ICT usage after hours and work-life conflict. The latter variable was recorded by the affected persons themselves and their significant others. Overall, more studies show that after-hours ICT use leads to work-life conflict than studies finding beneficial effects for work-life balance (Schlachter et al., 2018).

Moreover, researchers have studied the effects of ICT usage after hours on employees’ well-being. Schlachter et al. (2018) cite both quantitative and qualitative studies showing that the work-related usage of ICTs after hours impedes the individual recovery process, which is a significant predictor of well-being (Sonnentag et al., 2008).

One reason for this is that the work-related use of ICTs after hours makes it more challenging to detach oneself from work. For instance, Y. Park et al. (2011) find that ICT usage after hours has a negative effect on psychological detachment. Mazmanian et al. (2013, p. 1346) find similar patterns in their qualitative study of knowledge professionals’ use of mobile email devices. One interviewed person asked: “At what point of your day does the workday end? This tool [mobile email device] makes it difficult for that workday to end.” Indeed, the studies cited by Schlachter et al. (2018) show that work-related after-hours ICT use is linked to sleeping issues. In addition, Schlachter et al. (2018) show that studies have found other adverse health effects of work-related ICT usage

after hours, including stress, diminished psychological well-being, higher sickness absence, and health impairments. Belkin et al. (2020) find that the amount of time workers devote to emails after hours is negatively related to work detachment. Additionally, the study showed that work detachment is negatively associated with employee emotional exhaustion.

2.2.4 Moderating Factors of ICT Usage After Hours

Several moderating factors were examined that buffer the detrimental effects of ICT usage after hours or foster advantages: Schieman and Glavin (2008) find that the relationship between receiving work-related contact after hours and work-home conflict is positive when job autonomy is low. When job autonomy was high, however, the positive relationship became insignificant. This result could be replicated in 2013 when Schieman and Young (2013) found that the positive effect of work contact after hours on work-home conflict is lower when job autonomy is high rather than low. Moreover, Schieman and Young (2013) found similar buffering effects for schedule control and challenging work. Finally, comparable moderation effects were seen for the health outcomes of sleep problems and distress to varying degrees. Therefore, the authors conclude that employees need resources to deal with the challenges of work-related communication after hours. In addition to job resources, previous research (Derks & Bakker, 2012) has shown that relaxation activities and psychological detachment mitigate the positive relationship between smartphone use and work-home interference.

Moreover, it was revealed that organizational norms can also influence the effects of work-related ICT usage after hours on employees' well-being (Schlachter et al., 2018). Derks, van Mierlo, and Schmitz (2014) examined the moderating influence of organizational segmentation norms on the association between daily use of smartphones and mental detachment. Results indicated that day-to-day smartphone use had a negative impact on detachment when segmentation norms were high. Contrariwise, a positive relationship was found

when segmentation norms were low. This result indicates that particularly those employees who perceived high segmentation norms and used their smartphones intensively had problems detaching themselves from work. This finding suggests that communication behaviors contrary to organizational norms are particularly detrimental to emotional well-being. The authors explain the moderation effect by implying that those employees who are not accustomed to integrating work and personal life (who perceive strong segmentation norms) have difficulty switching off when they use their smartphones heavily. In addition, it was revealed that organizational segmentation norms had a positive effect on psychological detachment. I.e., those who worked in organizations with high segmentation norms had higher levels of detachment regardless of their daily smartphone use.

By the same token, previous research has considered moderators that exacerbate the detrimental effects of ICT usage after hours. Schlachter et al. (2018) identified several boundary conditions which worsen the detrimental impact of ICT usage after hours. First, they cite studies showing that organizational norms that pressure employees to do technology-assisted supplemental work reinforce the disadvantages of ICT usage after hours (e.g., Fender, 2010).

Second, previous research has shown that hierarchical level moderates the effects of ICT usage after regular business hours on perceived work-life conflict. Boswell and Olson-Buchanan (2007) assumed that managers would “experience less work-to-life conflict associated with [ICT usage] after hours relative to non-managers because of higher expectations/norms surrounding workloads as well as greater autonomy and control present in their jobs” (p. 603). Contrary to their predictions, they found that the association between ICT usage after regular business hours and work-life conflict was even more pronounced for managers relative to employees without personnel responsibilities. Moreover, Schieman and Young (2013) observed that the effects of ICT usage after hours on work-life conflict and sleep problems were stronger for those who experienced high job pressure. This result also supports the finding of Boswell and Olson-

Buchanan (2007), considering that managers generally experience higher job pressure than employees (Bruch & Hesse, 2019).

2.3 Research Gaps and Intended Contributions

The literature review shows a significant amount of research interest in the work-related use of ICTs after hours. Parallel to the rapid technological developments in the business world, the number of research studies has also grown continuously. Below, various research gaps will be identified from which six research questions will be derived. All research questions answer the overarching research question of *how the potential of new flexibility through ICT can be used to promote both performance and well-being in organizations*.

2.3.1 The Influence of Executives' ICT Usage After Hours on Their Job Performance

In general, the effects of leaders' ICT usage are not well understood (B. Wang et al., 2020), which is particularly critical because of two issues. First, executives are more likely to use ICTs after hours for work-related purposes than employees without personnel responsibility (see section 1.1.3). Second, the effects of after-hours ICT use seem to be even more pronounced among managers (Boswell & Olson-Buchanan, 2007). Boswell and Olson-Buchanan (2007) found that the hierarchical level moderates the association between ICT usage after hours and work-life conflict to the extent that the association was stronger for those in managerial positions. This finding indicates that executives are even more sensitive to the work-related use of ICTs after hours. Hence, future research should address work-related ICT use by executives.

Further expanding on this point, B. Wang et al. (2020, p. 695) stress that the underlying processes of ICT usage are not clear yet because "most scholars have tended to explore the direct relationship between ICT and individual behaviors and outcomes and have kept the effect on work per se out of the loop." Thus,

the first research question asks how executives' ICT usage after hours affects their job performance:

Research question 1: *How does executives' ICT usage affect their job performance?*

2.3.2 Boundary Conditions at the Individual Level Influencing the Effects of Executives' ICT Usage After Hours

The literature review showed that research examining the relationship between work-related ICT usage after hours and perceived work flexibility is mixed. Whereas some studies found positive effects, others have found negative or no effects (Schlachter et al., 2018). This research status suggests that the relationship depends on boundary conditions, which future research must identify. Schlachter et al. (2018) state that "more research into the mechanisms and moderating influences regarding [ICT usage after hours] and its outcomes is considered advisable to advance knowledge on the empowerment/enslavement paradox and its potential resolution" (p. 825). Also, given the first research gap, it seems appropriate to investigate moderators that influence the effects of executives' ICT usage after hours. Personality factors, in particular, have been neglected as moderators by previous research. Therefore, it seems relevant to also investigate personality factors as moderators of the effects of executives' ICT use after work. Thus, the second research question is:

Research question 2: *Under what conditions can executives exploit the potential of ICTs after hours?*

2.3.3 Executives' ICT Usage and Employees' Health

As formulated in the first research gap, there have been few studies to date that examine work-related ICT use after hours by executives. Therefore, it is not surprising that there have been no studies thus far investigating the impact of work-related ICT use by executives after regular business hours on employee

health. However, previous studies have shown the relevance of leaders to employees' well-being (Montano et al., 2017). For example, the behaviors of leaders have a signal effect on the rest of the organization. In addition, they are indicators of what is both expected and incentivized in a company. Therefore, the third research question is:

Research question 3: *How does after-hours ICT use by executives affect employees' health?*

2.3.4 The Impact of Executives' ICT Usage on the Organizational States and Organizational Outcomes

In general, to the best of the author's knowledge, no research thus far has been conducted on after-hours work-related ICT usage at the organizational level of analysis. However, this is particularly important when focusing on executives' ICT usage, as managers can significantly shape organizational states, such as organizational norms and climates, and organizational outcomes through their behavior (D. V. Day et al., 2014). In conjunction with this, no quantitative research examined how norms related to availability via ICTs emerge. Given the fact that organizational norms regarding ICT use after hours have a strong influence on employees (W. J. Becker et al., 2021; Belkin et al., 2020; Y. Park et al., 2011; Piszczek, 2017), this shortcoming is striking.

In addition, organizational norms and climates are inherent organizational-level constructs. Nevertheless, previous research has analyzed them only at the individual level (W. J. Becker et al., 2021; Belkin et al., 2020; Fenner & Renn, 2010; Y. Park et al., 2011; Piszczek, 2017; Richardson & Benbunan-Fich, 2011). W. J. Becker et al. (2021) state that "a future study that samples multiple workgroups and organizational members would be able to assess the degree of agreement and conformance with organizational expectations for e-mail monitoring." In particular, the causes and effects of organizational climates regarding ICT use after hours should be investigated. Therefore, the fourth research question asks:

Research question 4: *What impact does leaders' ICT usage have on organizational norms and outcomes?*

2.3.5 Boundary Conditions at the Collective Level Influencing the Effects of Executives' ICT Usage After Hours

Related to the previous research gap, research has been neglecting boundary conditions at the collective level, which influence the effects of executives' ICT usage after hours on employees' well-being. One avenue of future research would be to investigate what resources need to be invested by employees to prevent resource loss. The use of resources to prevent resource loss is a critical proposition of the conservation of resource theory (Hobfoll, Halbesleben, Neveu, & Westman, 2018). Hence, the fifth research question is:

Research question 5: *Which boundary conditions influence the effects of leaders' ICT usage after hours on employees' well-being?*

In addition, it should be noted that technologies are developing far faster than researchers are publishing on the topic, which is due, among other things, to the duration of the publication process. Initial studies on ICT use after hours focused on pagers and personal digital assistants (e.g., Boswell & Olson-Buchanan, 2007), which no longer have much to do with today's smartphones. But also, more recent studies focus on technologies that no longer play a role in the current era. For example, the 2013 study by Mazmanian et al. examined "how knowledge professionals use [their BlackBerry] mobile email devices" (p. 1337). Occasionally, BlackBerry had a market share of 50% in the U.S. and a market share of 20% worldwide. However, today (as of 2021), the market share is less than one percent (Appolonia, Nixdorf, & Robert, 2019). Also, for this reason, it seems worthwhile to conduct new research on ICT usage that considers current technological developments. New investigations would answer the question of Schlachter et al. (2018) "whether existing findings remain applicable or have to be reconsidered" (p. 837).

2.3.6 Antecedents and Effects of Boundary Control at Multiple Levels

A substantial proportion of studies included in the literature review analyzed ICT usage for work-related purposes outside regular business hours from the perspective of boundary theory (Ashforth et al., 2000; for a detailed discussion of ICT usage and boundary theory, see section 2.1.3). While the previous focus of research in this strand has been to analyze which boundary management style is most effective (Kossek, 2016), recent studies show that neither integration nor segregation is good per se. What matters is that employees can work according to their individual needs (Kossek et al., 2012; Kossek & Lautsch, 2007; Kreiner, 2006; Piszczek, 2017). If a person perceives that he or she has “control over how (he or she) manages the boundaries between work and family life” (Kossek & Lautsch, 2012, p. 161), he or she has a high level of *boundary control*. Positive effects of this construct on individual-level outcomes were demonstrated in several studies (e.g., Hesse & Bruch, 2021; Kossek et al., 2012; Piszczek, 2017). These investigations point toward the conclusion that having control over the boundaries between the work and the private domain is becoming an essential resource in a world of work characterized by increasingly blurred boundaries (Kossek & Lautsch, 2012).

However, it remains unclear whether these results translate to the collective level and how the organizational context influence individual-level effects of boundary control. Therefore, the question arises, what are the antecedents and performance implications of collective boundary control? And how does organizational context shape the effects of individual boundary control on an employee’s health? To the best of the author’s knowledge, no study has examined boundary control at multiple levels so far. Based on previous findings, it seems that individuals benefit from boundary control. However, on the collective level, it is questionable whether organizations also benefit, i.e., whether there are mutual gains or whether organizational performance decreases with increasing collective boundary control. Hence, the sixth research question is:

Research question 6: *What are the antecedents and performance implications of collective boundary control? And how does organizational context shape the effects of individual boundary control on an employee's health?*

All research questions are summarized below in Table 1.

Research Question 1:	<i>How does executives' ICT usage affect their job performance?</i>
Research Question 2:	<i>Under what conditions can executives exploit the potential of ICTs after hours?</i>
Research Question 3:	<i>How does after-hours ICT use by executives affect employees' health?</i>
Research Question 4:	<i>What impact does leaders' ICT usage have on organizational norms and outcomes?</i>
Research Question 5:	<i>Which boundary conditions influence the effects of leaders' ICT usage after hours on employees' well-being?</i>
Research Question 6:	<i>What are the antecedents and performance implications of collective boundary control? And how does organizational context shape the effects of individual boundary control on an employee's health?</i>

Table 1. Research questions derived from the literature review.

2.4 Methodological Approach

The derived research questions are to be answered through a scientific investigation which, according to King, Keohane, and Verba (1994, pp. 7–9), must meet four criteria: First, “the goal is inference.” That is, based on the investigation, conclusions should be drawn that go further than the particular observations. Second, “procedures are public.” This approach makes it possible to evaluate a

study's quality and ensure replicability. Third, "conclusions are uncertain." This statement means that all conclusions drawn from observations are subject to uncertainty. Therefore, a researcher should provide an estimate of uncertainty. And finally, "the content is the method." With this expression, the authors imply that "science" primarily describes the method and the underlying rules. Using these methods, various phenomena can be studied.

Specifically, statistical methods that meet the four formulated criteria are used to investigate the research questions. In addition, these methods allow to cope with large amounts of information and provide clear rules on how to summarize them (Kühnel & Krebs, 2014). The approach used is grounded in the positivist paradigm in which theoretically deduced hypotheses are tested (Mackenzie & Knipe, 2006). Hypotheses "are often stated quantitatively, where functional relationships can be derived between causal and explanatory factors (independent variables) and outcomes (dependent variables)" (Y. S. Park, Konge, & Artino, 2020, p. 690). Unlike in the natural sciences, the understanding of causality here, as in the social sciences in general, is not deterministic but probabilistic (Kellstedt & Whitten, 2013). Thus, all hypotheses posit tendencies: An independent variable X increases or decreases the probability of the dependent variable Y (Kellstedt & Whitten, 2013). Accordingly, a case that deviates from the prediction does not inevitably lead to the falsification of the hypothesis.

A cross-sectional design was chosen for all three studies to ensure high external validity and maximize the participation rate. The studies were conducted with participants from a wide range of German companies in different industries. The data gathering process took place from 2018 to 2020 and was conducted as a part of a larger project in collaboration with a benchmarking agency. The details of each data collection are described in the respective studies (see sections 3.3, 4.3, and 5.3).

2.5 Outline of the Dissertation

The current thesis comprises six main parts (see Figure 6). The introductory chapter shows that the thesis focuses on the complex interplay between information- and communication technologies, leadership, and health in organizations. Posthuma, Campion, Masimova, and Campion (2013, p. 1186) state that “good theory building requires both the conceptualization and the integration of concepts into a logically coherent framework.” Therefore, Figure 7 presents an integrative model that shows the interrelationships of the key variables examined in the three studies in a compact form. The model combines the organizational level with the individual level to account for the complexity of the real world.

2.5.1 First Chapter – The Interplay Between ICTs, Health, and Leadership in the New World of Work

The first chapter showed that the ways people accomplish their work are changing and that new forms of work emerge. Many people are no longer bound to fixed workplaces and working hours; instead, they can work at any time and in any place with individualized work arrangements. One of the main drivers of this development is digitalization and especially the rise of information and communication technologies. In addition, it was shown that these technologies are increasingly used after hours. These unprecedented changes have implications for health in organizations. It was shown that the promotion of healthy workplaces is significant from both an economic and an ethical perspective. Finally, leadership was discussed as a significant occupational health factor.

2.5.2 Second Chapter – Great Research Interest but Many Open Questions: A Theoretical Look at Work-Related ICT Use After Hours

Given the prevalence of ICT usage after hours and the unclear outcomes, a literature review was conducted to provide a deeper understanding of ICT usage

after hours. It was shown that the available studies on the effects of ICT use outside regular business hours do not allow any clear conclusions to be drawn as there is both a “bright” and a “dark” side. Furthermore, there are no empirical studies on the use of ICTs by managers and what consequences this use has for the well-being of employees. In addition, it is also unclear how companies support their employees in achieving psychological flexibility in the form of boundary control and what effects this has.

2.5.3 Third Chapter – Study 1: The Impact of After-Hours Work-Related Smartphone Use by Executives on Their Job Performance

Considering the shortcomings of previous research, I build in study 1 on the job demands-resources model and the conservation of resources theory and develop and assess an individual-level model that addresses research questions 1 and 2. The model explains the association between an executive’s after-hours work-related smartphone use and his or her job performance. Specifically, it suggests that work-related smartphone use after hours increases individual flexibility concerning work location and work time, which, in turn, fosters job performance. Moreover, it is hypothesized that whether managers can exploit the potential of ICTs depends on certain boundary conditions. Therefore, two resources (a personal resource and a job resource) and one job demand are examined that moderate the association between after-hours smartphone use for work purposes and work flexibility.

Hypotheses were evaluated using large-scale survey data from 4,257 executives from 94 German firms from multiple industries. Study 1 finds a positive indirect relationship between executives’ after-hours work-related smartphone use and their job performance, mediated by their perceived work flexibility. However, the positive indirect relationship depends on the degree of the executive’s polychronic orientation, the degree of formalization in the respective organization, and his or her job pressure.

2.5.4 Fourth Chapter – Study 2: An Organizational-Level Model of Leaders' After-Hours Work-Related Smartphone Use and Employee Well-Being

Study 2 focuses on the third, fourth, and fifth research questions. Specifically, based on climate models of organizational functioning and the conservation of resources theory, a firm-level model is developed and subsequently assessed that explains the association between leaders' after-hours work-related smartphone use and the collective well-being of employees. It is argued that if leaders in an organization use their smartphones after hours for work-related tasks, a climate of universal availability emerges. In such a climate, members of the organization hold the shared belief that their company expects them to be available after hours for work-related matters and communicate the completion of work tasks or new ideas outside their regular working hours immediately to their superiors. As a result, the central resources of employees are lost or threatened (Hobfoll, 2001), which, in turn, increases the risk of emotional exhaustion. I introduce employees' collective boundary control as a moderating factor and propose that boundary control is a crucial resource protecting employees from burning out collectively. Hypotheses were tested using large-scale survey data from 11,703 employees and 99 HR representatives collected in 99 German companies from multiple industries. Findings support the assumed relationship: Leaders' after-hours work-related smartphone use affects collective emotional exhaustion through the climate of universal availability. The positive indirect effect is weakened when employees' collective boundary control is high. Critical implications for future theorizing and research on leaders' ICT usage are discussed.

2.5.5 Fifth Chapter – Study 3: How Organizations Foster Collective Boundary Control and What is in It for Them

Taking into consideration the shortcoming of previous research, I draw in study 3 on the conservation of resources theory and design and test a multi-level

model which explains the antecedents and performance implications of collective boundary control. Moreover, the model indicates under which context the potential of individual boundary control is realized. Thus, study 3 addresses research question 6.

I argue that both competence-enhancing HR systems and decentralization foster collective boundary control. Furthermore, it is proposed that in organizations with a high degree of boundary control, there is a shared perception that employees have control over how they draw the lines between work and personal life. It is hypothesized that this perception will positively impact organizational performance. Moreover, it is expected that organizational ICT usage (i.e., the average level of virtual communication in a company) moderates the positive relationship between individual boundary control and an individual's well-being. I suggest that this association strengthens as organizational ICT usage increases.

Hypotheses were assessed using large-scale survey data from 8'273 employees, 148 HR representatives, and 144 top management teams from 154 German firms from multiple industries. My results support the assumed associations: Competence-enhancing HR systems and decentralization are positively linked to collective boundary control. Collective boundary control, on the other hand, had a positive effect on organizational performance. Individual boundary control, in turn, had a positive effect on an individual's well-being. In addition, I found empirical support for a cross-level interaction: Organizational ICT usage strengthened the impact of an individual's boundary control on his or her well-being. Implications for future theory building and research are elaborated.

2.5.6 Sixth Chapter – Promoting Health and Performance in the Era of Constant Accessibility

The concluding chapter synthesizes and discusses the key findings of this dissertation in a condensed manner: The research questions derived from the literature review will be answered here based on the results of the three studies.

Furthermore, the theoretical contributions of the whole thesis are presented. Recommendations for managerial practice follow this. Subsequently, the limitations of the work are revealed, and an agenda for future research is set. A conclusion of the research project and final remarks are given in the last section.

First Chapter – The Interplay Between ICTs, Health, and Leadership in the New World of Work

Information and Communication Technologies in the New World of Work
Health in Organizations – Significant from both an Economic and Ethical Perspective

Leadership Gains Importance in the New World of Work

Second Chapter – Great Research Interest but Many Open Questions: A Theoretical Look at Work-Related ICT Use After Hours

Positioning the Concept and Theoretical Relevance of After-Hours Work-Related ICT Usage

ICT Usage After Hours for Work Purposes: A Literature Review

Research Gaps and Intended Contributions

Methodological Approach

Outline of the Dissertation

Third Chapter – Study 1: The Impact of After-Hours Work-Related Smartphone Use by Executives on Their Job Performance

Fourth Chapter – Study 2: An Organizational-Level Model of Leaders' After-Hours Work-Related Smartphone Use and Employee Well-Being

Fifth Chapter – Study 3: How Organizations Foster Collective Boundary Control and What is in It for Them

Sixth Chapter – Promoting Health and Performance in the Era of Constant Connectivity

Summary of the Research Results

Theoretical Contributions

Implications for Management Practice

Limitations and Directions for Future Research

Conclusions and Outlook

Figure 6. Overview of the dissertation.

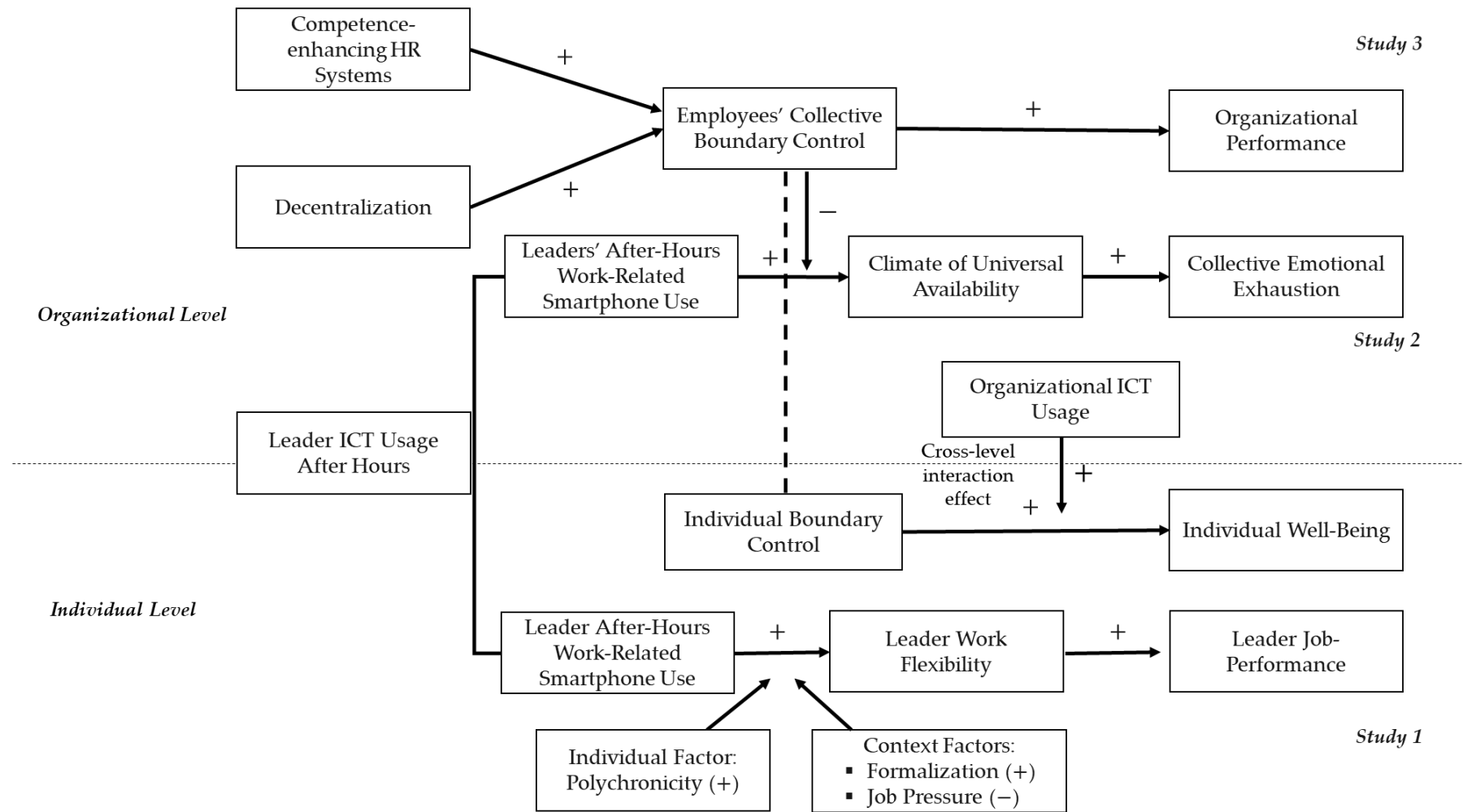


Figure 7. Integrative research perspective

Note. ICT = information and communication technology

3 Study 1: The Impact of After-Hours Work-Related Smartphone Use by Executives on Their Job Performance

The use of ICTs increases steadily and allows workers to stay constantly connected to their employers, colleagues, and customers. Especially executives make intensive use of ICTs for work-related purposes after hours due to the numerous demands that come along with their role. Given many executives' intensive usage of ICTs after hours, the question arises whether this behavior is beneficial or detrimental to their respective job performance. Unfortunately, available studies give no clear answer, as two shortcomings characterize them. Firstly, studies on the consequences of work-related ICT use after hours have produced mixed results (Schlachter et al., 2018). Secondly, previous research on ICT use has focused primarily on employees without managerial roles (B. Wang et al., 2020). Taking into consideration the shortcomings of prior research, I build on the job demands-resources model and the conservation of resources theory and develop and assess an individual-level model explaining the association between an executive's after-hours work-related smartphone use and their job performance. Specifically, I argue that work-related smartphone use after hours increases individual flexibility, which in turn fosters job performance. Moreover, it is hypothesized that whether managers can exploit the potential of ICTs depends on certain boundary conditions. Hypotheses were tested using large-scale survey data from 4,257 executives from 94 German firms from multiple industries. The study finds a positive indirect relationship between executives' after-hours work-related smartphone use and their job performance, mediated by their perceived work flexibility. The positive indirect relationship depends on the degree of the executive's polychronic orientation, the degree of formalization in the respective organization, and his or her job pressure.

Keywords: executives; technology; electronic communication; job performance

3.1 Introduction

In the “*new era of workplace connectivity*,” people are able to work anywhere and anytime (Butts et al., 2015, p. 763). Therefore, the lines between work and the private sphere are becoming more and more blurred (Kossek, 2016). In fact, employees’ connection to their company often does not end after regular business hours (Schlachter et al., 2018). An increasing proportion of the workforce uses ICTs for work-related purposes after regular business hours, i.e., they monitor incoming messages, respond to work-related e-mails, and complete work tasks (American Psychological Association, 2013; N. Zhang et al., 2021). In the wake of the Corona pandemic, the share of people using ICTs to work after hours has sharply increased (Teevan et al., 2021). Mobile technologies such as smartphones, notebooks, and tablets made this development towards constant accessibility possible. It was reinforced by growing competitive pressure and increasingly flexible markets (Spreitzer et al., 2017).

Regarding the usage of ICTs for work-related purposes after normal business hours, there are differences between employee groups. Managers use ICTs after hours for work-related purposes significantly more often than employees without leadership responsibility (Boswell & Olson-Buchanan, 2007). This group of staff was also particularly challenged in the wake of the Corona pandemic. Teevan et al. (2021) report on an organization with 3,500 employees in which work-related communication behaviors were recorded during the Corona pandemic. By comparison with the corresponding period of the prior year (2019), “software engineering people managers showed a 300% increase in after-hours instant messaging; 25% increase in after-hours meetings; as well as a 24% increase in completed pull requests” (p. 20).

Given the many demands of a managerial role, it is not surprising that executives make intensive use of ICTs for work-related purposes, even after hours. For example, leaders are expected to engage their employees, be inspirational to their followers, handle resistance against change, be positive role models, and

accomplish high-performance standards (Bruch & Hesse, 2019). All of this is difficult to implement within a limited period but sometimes requires constant accessibility via mobile ICTs.

Given the comparatively high and increasing usage of ICTs after regular business hours by executives, the question emerges as to what impact this has on the respective user. Theoretically, performance-enhancing and performance-hindering effects are conceivable (Schlachter et al., 2018). From the perspective of the job demands-resources model (Bakker & Demerouti, 2017), work-related ICT use after hours can be seen as a job resource. Mobile ICTs, like smartphones, make it possible to respond to work-related requests even after work hours at any place. This flexibility might increase a manager's autonomy, which, according to the job demands-resources model, leads to higher engagement and thus higher job performance. Work-related ICT use after hours can also mitigate the adverse health effects of job demands. For example, a manager could better schedule his or her heavy workload by answering work-related messages according to his or her individual needs.

On the other hand, work-related ICT use after hours may qualify as a job demand. Always being available for work might reduce leaders' perceived autonomy and control because they feel tethered to work (Jarvenpaa & Lang, 2005). The feeling of being tethered to work, in turn, could result in a stress response that leads to emotional exhaustion. Burned-out employees show lower performance on the job (Taris, 2006).

Empirical research on this question also does not provide any clear conclusions here and has two shortcomings. First, the evidence to date on the effects of work-related ICT use after regular business hours has been inconsistent (Schlachter et al., 2018; for a detailed literature review, see section 2.2): On the one hand, it was shown that modern ICTs allow an unprecedented degree of flexibility in terms of work location and working hours (Ashforth et al., 2000; Richardson & Thompson, 2012). Ward and Steptoe-Warren (2014), on the other hand, did not find that autonomy was increased by ICT usage after hours. The

study of Barley et al. (2011), on the contrary, pointed to a negative relationship between e-mail usage and personal flexibility. Moreover, empirical research suggests that ICT usage after hours comes along with constant accessibility, blurred boundaries between work and the private sphere, and pressure to work longer hours (Butts et al., 2015; A. Day, Scott, & Kevin, 2010). Secondly, most empirical studies have focused on employees without personnel responsibilities. There is a lack of studies on leaders' ICT usage (B. Wang et al., 2020). Therefore, it remains unclear how leaders' ICT usage affects their performance until now.

These shortcomings of the literature are particularly critical because executives are more likely to use ICTs after hours than employees without personnel responsibility (see section 1.1.3). Moreover, Boswell and Olson-Buchanan's (2007) research findings show that managerial status moderates the association between ICT usage after hours and work-life conflict; specifically, the relationship was stronger for people in managerial positions in comparison to those without personnel responsibilities. Therefore, the impact of ICT usage after hours is even more pronounced among managers than among employees without leadership roles.

Considering the shortcomings of previous research, I build on the job demands-resources model and develop and assess an individual-level model that explains the association between an executive's after-hours work-related smartphone use and his or her job performance. I argue that work-related smartphone use after hours increases individual flexibility concerning work location and work time. Managers translate the potential arising from this flexibility into increased job performance. However, prior research (Schlachter et al., 2018) has found that using ICTs for work-related matters after hours does not always lead to more flexibility; on the contrary, it may reduce it. Therefore, two resources (a personal resource and a job resource) and one job demand are examined that might moderate the relationship between after-hours work-related smartphone use and perceived work flexibility.

First, I propose that the association between an executive's work-related smartphone use after regular business hours and his or her perceived work flexibility depends on the executive's polychronic orientation. Polychronic orientation describes a personal preference for "doing two or more things simultaneously" (Bluedorn, Kaufman, & Lane, 1992, p. 17). Monochronically-oriented people, on the other hand, have a preference "for doing one thing at a time" (Bluedorn et al., 1992, p. 17). I argue that after-hours work-related smartphone use leads to higher perceived work flexibility and better job performance for polychronic executives.

Second, I suggest that the degree of formalization in an organization moderates the association between an executive's after-hours work-related smartphone use and his or her work flexibility. Previous research on smartphone use after hours has shown that the intrusion of work-related topics into private life can be a problem (Schlachter et al., 2018). Therefore, I propose that in highly formalized organizations, after-hours communication is more strongly regulated. The rules that come along with regulation should avoid the harmful effects of work-related smartphone use after hours on health and emphasize the positive effects like increased work flexibility. This flexibility, in turn, should be positively associated with job performance.

Finally, I examine job pressure as a moderating factor. I suggest that job pressure acts as a job demand that weakens the positive effect of an executive's after-hours work-related smartphone use on his or her work flexibility and hinders job performance.

Taken as a whole, this study analyzes *when* (i.e., contingent on which moderators) and *how* (i.e., through which processes) leaders' after-hours work-related smartphone use increases their performance (see Figure 8). Besides managerial implications regarding the use of ICTs in companies, the study contributes to theory and empirical research in three ways.

First, this research focuses on leaders' ICT usage, which previous studies have nearly neglected (B. Wang et al., 2020). By developing and testing a holistic model of the underlying mechanism and moderators, this research aims to advance the theoretical understanding of *how* and *when* after-hours ICT use by executives improves their job performance. Given the increasing usage of ICTs for work-related purposes after regular business hours, several practical implications can be derived from this study. Second, whereas previous studies have focused on the detrimental effects of ICT usage after hours, this research examines the "bright side." Third, I show that polychronicity, formalization, and job pressure are critical moderators in the relationship between after-hours work-related ICT usage of leaders and their work flexibility. Hence, this study adopts a contingency perspective and examines both job resources and a job demand as boundary conditions. The study's findings align with the job demands-resources model and thus further validates the model in the face of new technological developments.

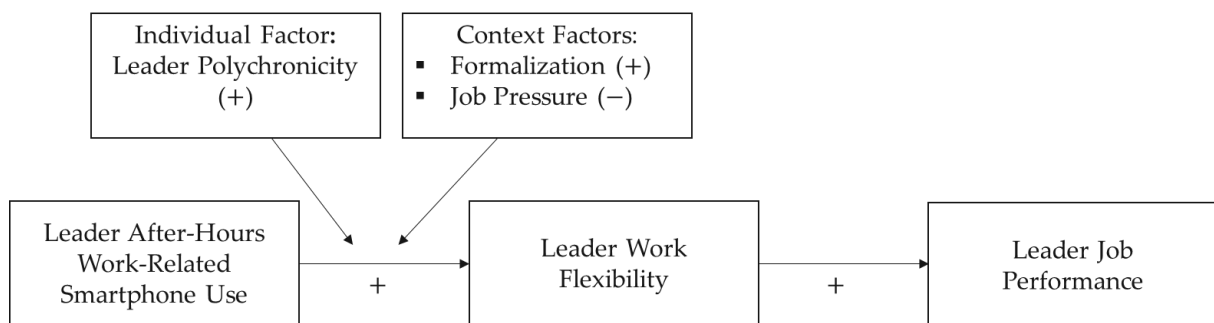


Figure 8. Study 1. The effect between a leader's after-hours work-related smartphone use and his or her job performance.

3.2 Theoretical Background and Hypotheses Development

To develop the theoretical model, I rely on the job demands-resource model (Bakker & Demerouti, 2007; Demerouti et al., 2001) and the conservation of resources theory (Hobfoll et al., 2018). Based on this theoretical basis, the association between executives' after-hours work-related smartphone use and their performance was derived. In general, the models imply that after-hours work-

related smartphone use by an executive impacts his or her work flexibility. This flexibility, in turn, should translate into job performance.

Moreover, the job demands-resource model states that job resources moderate the impact of job demands on exhaustion in such a way that the effects are buffered (“resource hypothesis”; Schieman & Glavin, 2008). Employees with access to sufficient job resources are more capable of managing the demands of their positions. In addition, the model implies that the positive relationship between job demands and exhaustion is stronger when additional demands come into play (“demand hypothesis”; Schieman & Glavin, 2008). Accordingly, managers with high job resources should be more likely to realize the positive effects of after-hours smartphone use, as the adverse effects are buffered. In contrast, managers who are exposed to elevated levels of stress should find it more difficult to exploit the potential of mobile ICTs. In the following section, I develop the theoretical rationale and the explanation for the proposed model.

3.2.1 The Effect of After-Hours Work-Related Smartphone Use by Executives on Their Work Flexibility

A recent study from the Boston Consulting Group indicates that 82% of the managers surveyed say that their job is harder today than it used to be. 64% describe themselves as stressed. 34% of respondents would prefer to quit directly (Boston Consulting Group, 2019). The reason for these figures lies in the job demands to which managers are exposed. In general, managers are exposed to higher job demands compared to employees without personnel responsibilities (Hambrick, Finkelstein, & Mooney, 2005). For example, leaders are expected to be effective role models, drive change processes, and mobilize their followers to meet organizational goals (e.g., Bass, 1985; Caldwell, 2003; Kotter, 1996). They have to make difficult decisions and deal with resistance from employees, especially in change situations (Oreg, Vakola, & Armenakis, 2011). These examples indicate that high-performance targets must often be met, and communication is a crucial task for managers. Ultimately, managers are also assessed based on

their performance because management is “the art of getting things done” (Bruch & Ghoshal, 2004, p. 3).

Against this backdrop, the smartphone represents a vital job resource that allows executives to work flexibly regarding time and location, which is referred to below as *work flexibility* for two reasons. First, the ICT enables executives to make decisions outside of regular business hours. The freedom thus gained is a decisive advantage, especially in increasingly complex and fast-paced work contexts (Barkema, Baum, & Mannix, 2002). Therefore, it is likely that those executives who use their smartphones after hours will experience a sense of flexibility. Second, the smartphone helps executives follow the flow of information in an uncomplicated way. Mazmanian (2013) studied the ICT use of knowledge workers and showed that they primarily used their mobile devices to track the flow of information, which gave them a sense of autonomy. For example, the executive can decide whether or not to enter into a conversation by quickly reading the messages.

Empirical evidence indicates that after-hours ICT usage is positively related to individual perceived flexibility (Cavazotte et al., 2014; Mazmanian et al., 2013; Middleton & Cukier, 2006) and thus supports the previous argument. Moreover, Richardson and Thompson (2012) found a positive relationship between ICT usage after hours and job control in their quantitative study. Therefore, the first hypothesis states:

Hypothesis 1: After-hours work-related smartphone use by executives is positively related to their work flexibility.

3.2.2 The Moderating Influences of Polychronicity, Formalization, and Job Pressure

3.2.2.1 *Polychronicity*

Previous literature (Schlachter et al., 2018; B. Wang et al., 2020) suggests that individual reactions to ICT usage after hours are dependent on personal factors (for a full review, see section 2.2.4). Several factors were examined, all of which influence an individual's reactions to the specific demands of after-hours work-related ICT usage. One demand is particularly noteworthy in this context: receiving work-related communication after hours might be experienced as an invasion into the private sphere (Boswell & Olson-Buchanan, 2007). According to boundary theory (Ashforth et al., 2000), receiving work-related messages after hours is a boundary-crossing process. Often, work-related messages are perceived as interruptions that require cognitive switches between the professional and the private sphere (Derks, Bakker, & Gorgievski, 2021). These transitions, subsequently, might induce role stress (Kahn et al., 1964) and work-life conflict (Kossek & Lee, 2017).

In this context, it seems reasonable to consider the polychronic orientation of managers, as this preference might help managers deal with the specific challenges of work-related ICT use after hours. Polychronicity “refers to an individual's preference for working on many things simultaneously as opposed to one at a time” (Hecht & Allen, 2005, p. 155). In contrast to monochronically-oriented people, polychronically-oriented people do not divide their work tasks into different time blocks but complete them in parallel (Bluedorn et al., 1992).

When polychronic leaders receive work-related messages after hours, they do not feel their work flexibility is threatened. Instead, they see the smartphone use after work as an opportunity to unite different spheres simultaneously. Moreover, polychronic managers can better protect against the downsides of after-hours work-related smartphone use. For instance, they should experience less

work-life conflict because they prefer to do many things simultaneously. Therefore, they can better manage different role expectations at the same time. Furthermore, Berger and Bruch (2021) state that polychronically-oriented people “are likely to perceive role boundaries as rather permeable” (p.5). Hence, polychronic managers are better able to realize the benefits of smartphone use for work purposes after regular business hours in terms of increased work flexibility.

A recent study (Berger & Bruch, 2021) indicates that a polychronic orientation helps employees cope with the demands of multiple team memberships. It was shown that those employees who worked in multiple teams simultaneously and had a polychronic orientation exhibited less role stress and higher role efficacy than their monochronic colleagues. Role stress, in turn, was positively, and role efficacy was negatively associated with emotional exhaustion. I argue that a polychronic orientation also helps managers deal with the challenges of work-related ICT usage outside of regular business hours, as it can equally involve role conflict. Similarly, polychronic managers are more likely to perceive role efficacy through using their smartphones after hours, which increases their perceived flexibility. Therefore, I propose:

Hypothesis 2: The association between after-hours work-related smartphone use by executives and their work flexibility is moderated by their polychronicity, such that the association is positive and strengthens as their polychronicity increases.

3.2.2.2 Formalization

Previous studies on ICT use after hours have shown that the reason why employees use their smartphones after work matters in particular (Diaz, Chiaburu, Zimmerman, & Boswell, 2012; Matusik & Mickel, 2011; Piszczek, 2017). If organizational norms force employees to use ICTs after hours, detrimental effects are more likely. The hoped-for gain in flexibility through technology use only occurs when there is no organizational pressure to be always on, even after

hours. Hence, the organizational context plays a crucial role as a boundary condition for the effect of work-related ICT use after regular business hours by managers on their well-being (Schlachter et al., 2018). Therefore, it is suggested that the degree of formalization in an organization acts as a job resource buffering potential detrimental effects of after-hours work-related smartphone use.

Formalization “reflects the degree to which work processes are codified in written rules and standards” (Knight, Menges, & Bruch, 2018, p. 197). Organizations with a high degree of formalization are characterized by “prescribed and documented rules for employees’ work.” On the contrary, “less formalized organizations have fewer written guidelines to govern employee behavior” (Knight et al., 2018, p. 197). I argue that, especially in those organizations with a high degree of formalization, there is a lower likelihood of informal norms forcing executives to use their smartphones for work-related matters after hours. Instead, there are likely digital operating rules that govern the use of digital media outside of work hours in these organizations. Therefore, the following hypothesis predicts:

Hypothesis 3: The association between after-hours work-related smartphone use by executives and their work flexibility is moderated by organizational formalization, such that the association is positive and strengthens as organizational formalization increases.

3.2.2.3 Job Pressure

As mentioned initially, managers are often exposed to particularly elevated levels of job demands reflecting a feeling of job pressure. Individuals who feel high levels of job pressure “feel overwhelmed by the amount of work they have to do, they have to work on too many tasks at the same time and report that the demands of their job exceed the time they have to do the work” (Schieman & Young, 2013, p. 248). I propose that such a context might hinder executives from realizing the potential of information technologies.

First, managers who feel overburdened by their work and complete too many tasks at once quickly lose focus (Bruch & Ghoshal, 2004). If these managers intensively use their ICTs after hours, they are less likely to increase their flexibility. Instead, the combination of job pressure and ICT usage after hours might lead to adverse effects such as “active-non action,” respectively “unproductive business” (Bruch & Ghoshal, 2002).

Second, both ICT usage after hours and job pressure draw on the same personal resources (Schieman & Young, 2013). The conservation of resources theory implies that when resources are exhausted, a state of emotional exhaustion can result (Hobfoll et al., 2018). This state is at odds with a gain in perceived flexibility. Therefore, I propose the following hypothesis:

Hypothesis 4: The association between after-hours work-related smartphone use by executives and their work flexibility is moderated by job pressure, such that the association is positive and weakens as job pressure increases.

3.2.3 From Work Flexibility to Job Performance

I propose that work flexibility regarding work time and place increases managers' performance for two reasons. First, managers who perceive their schedules as flexible should experience less conflict between the private and the work domain. For instance, a manager with work task flexibility can schedule his or her tasks according to his or her needs so that job duties do not conflict with family obligations. This argument is supported by previous research showing that perceived schedule flexibility lowers work-family conflict (Hill, Erickson, Holmes, & Ferris, 2010). Work-family conflict, in turn, is positively linked to emotional exhaustion (M. Zhang, Griffeth, & Fried, 2012) and negatively related to job performance (van Steenbergen & Ellemers, 2009). As executives with more flexibility regarding their work hours experience less conflict between their personal and professional lives, they should have more time to focus on their jobs, which benefits their goal achievement.

Second, it is argued that perceived flexibility in terms of work location is also directly beneficial for a manager's job performance. In accordance with work design theories (Grant & Parker, 2009), executives who can freely choose their work location should have a higher feeling of perceived autonomy, a motivational workplace characteristic. According to the Job Characteristics Model (Hackman & Oldham, 1976), autonomy leads to the experience of responsibility, which in turn benefits job performance. This argument is supported by meta-analytic evidence, showing that remote work has beneficial effects on individual job performance (Gajendran & Harrison, 2007). Moreover, Allen et al. (2014, p. 108) conclude from a review of numerous studies that have addressed boundary management that "the overall pattern of results indicates that flexibility is associated with less (work-to-family) conflict." Based on the preceding arguments, I propose the following hypothesis:

Hypothesis 5: Executives' work flexibility is positively associated with their job performance.

3.2.4 An Integrative Model of After-Hours Work-Related Smartphone Use and Job Performance

Based on the preceding reasoning, I suggest that work flexibility mediates the association between an executive's after-hours work-related smartphone use and his or her job performance. Moreover, I expect that the indirect effect of an executive's after-hours work-related smartphone use on his or her job performance is contingent on (a) his or her polychronic orientation (polychronicity), (b) organizational formalization, and (c) job pressure. Hence, I posit the following hypotheses:

Hypothesis 6(a): Polychronicity moderates the indirect association between an executive's after-hours work-related smartphone use and his or her job performance, as mediated by his or her perceived work flexibility. The indirect association is positive and gets stronger with increasing polychronic orientation.

Hypothesis 6(b): Organizational formalization moderates the indirect association between an executive's after-hours work-related smartphone use and his or her job performance, as mediated by his or her perceived work flexibility. The indirect association is positive and strengthens as organizational formalization increases.

Hypothesis 6(c): Job pressure moderates the indirect association between an executive's after-hours work-related smartphone use and his or her job performance, as mediated by his or her perceived work flexibility. The indirect association is positive and weakens as job pressure increases.

3.3 Methods

3.3.1 Data Collection and Sample

Hypotheses were assessed using a data set of 4,257 executives from 94 German firms. The data was gathered in 2018 in the context of a broader project in cooperation with a benchmarking agency. All executives of the collaborating firms were invited to the study via an email explaining the research project's purpose and providing a link to a website-based questionnaire. Three features of the research design assisted in alleviating common method bias (Podsakoff, MacKenzie, & Podsakoff, 2012): Firstly, Siemsen, Roth, and Oliveira (2010) show that common method bias is less of a concern when it comes to moderation effects. Moderation effects underlie most of the study's hypotheses. Secondly, different measurement scales were utilized to lessen the risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003): Leaders' after-hours work-related smartphone use, job pressure, polychronic orientation, and work flexibility were measured on a five-point Likert scale. On the other hand, formalization was evaluated on a seven-point Likert scale. Job performance was assessed on a scale ranging from zero to a hundred. Lastly, previous research (Conway & Lance, 2010) suggests that the risk of common method bias is also

lower when the self-reported measurements cannot be straightforwardly obtained from other informants. In the present study, this is true for after-hours smartphone use, perceived flexibility, and polychronicity of leaders. In the analyses, listwise deletion was used when data points were missing for individual cases.

Executives from different industries were sampled to obtain a representative picture. The final data set consisted of executives from four different sectors: service (55%), production (29%), trade (7%), and finance (9%). On average, 350 workers were employed by each company ($SD = 396$) when data were collected. The response rate within the companies was 70% on average. 71.6% of respondents were male, and the average age of respondents was 43.1 years. Executives were working an average of 43.5 hours per week. According to their self-assessment, 9.3% of the managers surveyed can be classified as upper management, 35.4% as middle management, and 55.2% as lower management.

3.3.2 Measures

After-hours work-related smartphone use ($\alpha = 0.89$). Executives' after-hours work-related smartphone use was evaluated via Derks and Bakker's (2012) smartphone use scale consisting of four items. Participants were asked to which extent they used their smartphone after hours for work-related purposes. Exemplary items include "I use my smartphone intensively during after work hours for work-related purposes" and "When my smartphone blinks to indicate new messages after hours, I cannot resist checking them." The items were rated on a 5-point Likert scale from 1 "do not agree at all" to 5 "agree strongly."

Work flexibility ($\alpha = 0.66$). Two self-developed items were used to capture managers' perceived work flexibility. To measure the core of the new flexibility in the new world of work (see section 1.1.1), one item refers to flexibility with respect to working hours (*flextime*), and one item refers to flexibility in terms of work location (*flexplace*) (Thompson, Payne, & Taylor, 2015). The items are: "I can arrange my working hours flexibly" and "I can freely choose my place of

work (on-site at work, home office, on the way...).” Executives rated the questions on a 5-point Likert scale from 1 “do not agree at all” to 5 “agree strongly.”

Job performance. To assess executives’ job performance, participants were asked to “evaluate to what extent [they] have fulfilled the objectives agreed with [their] superior in the last six months (in %).” This single-item measurement has also been used in previous research (Kunze, Raes, & Bruch, 2015).

Polychronic orientation ($\alpha = 0.75$). Five items from the *Inventory of Polychronic Values* were used to measure employees’ polychronic orientation (Bluedorn, Kalliath, Strube, & Martin, 1999). This scale was also used in prior research on polychronicity (e.g., Berger & Bruch, 2021; Souitaris & Maestro, 2010). Exemplary items are “I like to deal with different things at the same time” and “I would rather complete a task every day than do different tasks in part (inverted item).” The items were rated on a 5-point Likert scale from 1 “does not apply at all” to 5 “very strongly applies.”

Formalization ($\alpha = 0.65$). In line with prior research (e.g., Jansen, van den Bosch, & Volberda, 2006; Knight et al., 2018), the level of formalization in a respondent's company was measured using five items from Pugh, Hickson, Hinings, and Turner (1968). Sample items are “Rules and procedures play a central role in our company” and “Written instructions are available for every conceivable situation.” Executives answered on a 7-point Likert scale from 1 “do not agree at all” to 7 “agree completely.”

Job pressure ($\alpha = 0.82$). To assess job pressure, a self-developed four-item scale was used. Respondents were asked, among other things, how frequently it occurred that they had to “work under high time and performance pressure” and whether they had to “work very fast.” Items were derived from previous research on job demands (Kristensen, Bjorner, Christensen, & Borg, 2004; Schieman & Young, 2013). The items were rated on a 5-point Likert scale from 1 “never” to 5 “extremely often/always.”

Control variables. I included three control variables to lower the risk of omitted variable bias (T. E. Becker et al., 2016). Consistent with prior research on ICT usage-after hours (Boswell & Olson-Buchanan, 2007; Piszczek, 2017), I controlled for the respondent's gender, age, and the number of hours they work per week. First, gender was included because previous research (L. E. Duxbury & Higgins, 1991) found that gender dissimilarities exist regarding work-family conflict, job pressure, and ICT usage after hours. Second, executives' age was considered due to its effect on several dimensions of job performance (Ng & Feldman, 2008b). Finally, I accounted for participants' working hours per week, as this variable is empirically linked to employee well-being and several occupational and organizational variables like job autonomy and work centrality (Ng & Feldman, 2008a).

3.3.3 Convergent and Discriminant Validity

I ran a confirmatory factor analysis (CFA) and specified five latent factors (one respective factor for after-hours work-related smartphone use, polychronicity, formalization, job pressure, and work flexibility). Model fit was assessed by using the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) together with two incremental fit indices – the comparative fit index (CFI) and the incremental fit index (IFI). The results of the CFA indicated acceptable fit ($\chi^2 = 316.1$, $df = 126$, $p < 0.001$, $CFI = 0.95$, $IFI = 0.95$, $RMSEA = 0.046$, $SRMR = 0.047$). As expected, all items loaded significantly to their respective latent variables.

3.3.4 Analytical Techniques

Hierarchical linear regression was applied to compute all estimates. I mean centered independent variables prior to analysis to simplify interpretation (L. S. Aiken & West, 1991) and alleviate the risk of multicollinearity (Iacobucci, Schneider, Popovich, & Bakamitsos, 2016). The interaction effects were plotted at low (1 SD below the mean) and high (1 SD above the mean) values of the

moderators (i.e., polychronic orientation, formalization, and job pressure). To test for the predicted conditional indirect effects, I followed Preacher, Rucker, and Hayes's (2007) recommendations. With this approach, the point estimate of the indirect effect of a predictor on a criterion variable through the mediating variable is investigated for altered values of the moderator variable using a bootstrapping procedure (with 10,000 bootstrap samples) (Hüttermann & Bruch, 2019). Following recommendations from the methodological literature (Hayes, 2018), the following values of the moderator were used: one standard deviation below the mean, the mean, and one standard deviation above the mean.

3.4 Results

3.4.1 Descriptive Statistics and Intercorrelations

Intercorrelations and descriptive statistics are shown for all variables in Table 2. As predicted, work-related smartphone use after normal business hours is positively linked to work flexibility ($r = 0.17, p < 0.01$). Work flexibility, subsequently, correlates positively with job performance ($r = 0.14, p < 0.01$).

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1.	After-hours work-related smartphone use	2.55	1.14	--								
2.	Work flexibility	3.17	1.12	0.17**	--							
3.	Job performance	82.84	18.57	-0.02	0.14**	--						
4.	Polychronicity	2.97	0.77	0.16**	0.15**	0.07**	--					
5.	Formalization	4.00	1.34	-0.09**	-0.10**	0.02	-0.05	--				
6.	Job pressure	3.99	0.63	0.26**	-0.07**	-0.06**	0.09**	-0.13**	--			
7.	Gender (female = 1)	0.28	0.45	-0.13**	-0.06**	-0.01	-0.02	0.07*	-0.01	--		
8.	Age	43.07	10.24	-0.01	0.05**	0.05*	0.05*	0.02	0.00	-0.09**	--	
9.	Working hours per week	43.43	7.80	0.32**	0.11**	0.04	0.12**	-0.18**	0.24**	-0.31**	0.05**	--

Note. N = 4,257 Executives. *p < 0.05 **p < 0.01
Table 2. Study 1. Means, standard deviations, and correlations.

3.4.2 Hypothesis testing

3.4.2.1 *Hypothesis 1: The Association Between After-Hours Work-Related Smartphone Use and Work Flexibility*

The first hierarchical linear regression analysis is depicted in Table 3. At first, I analyzed the effect of executives' after-hours work-related smartphone use on work flexibility: To this end, I first ran a controls-only model (see Table 3, Model 1a), which explained 1% of the variance in work flexibility. In a second step, after-hours work-related smartphone use was entered into the regression equation. In support of Hypothesis 1, I found a positive association between after-hours work-related smartphone use and work flexibility ($\beta = 0.14$, $p < 0.01$, $\Delta R^2 = 0.02$, $p < 0.01$; see Table 3, Model 1b).

3.4.2.2 *Hypothesis 2: Polychronicity as Moderator Variable*

Hypothesis 2 states that the association between after-hours work-related smartphone use by executives and their work flexibility is moderated by their polychronicity, such that the association is positive and gets stronger as their polychronicity increases. To test this hypothesis, I examined the interaction between executives' after-hours work-related smartphone use and their polychronic orientation on their perceived work flexibility and found it to be significant ($\beta = 0.04$, $p < 0.01$). It further explained a significant portion of incremental variance in perceived work flexibility ($\Delta R^2 = 0.2\%$, $p < 0.05$, see Model 1d in Table 3). The full model explains 5% of the variance in work flexibility.

Subsequently, I conducted a simple slopes analysis and plotted the interaction effect at low (-1 SD ; $\beta = 0.08$, $p < 0.01$), average ($\beta = 0.12$, $p < 0.01$), and high ($+1\text{ SD}$; $\beta = 0.16$, $p < 0.01$) values of the moderating variable (see Figure 9). The positive impact of after-hours work-related smartphone use on work flexibility becomes more pronounced under high levels of polychronic orientation. Hence, Hypothesis 2 is supported by the data.

Variables	Work flexibility			
	Step 1	Step 2	Step 3	Step 4
	Model 1a	Model 1b	Model 1c	Model 1d
<i>Controls</i>				
Gender	-0.04	-0.04	-0.04*	-0.04*
Age	0.05*	0.05**	0.05*	0.05*
Working hours per week	0.08**	0.04	0.03	0.03
<i>Predictor</i>				
Leader after-hours work-related smartphone use		0.14**	0.12**	0.12**
<i>Moderator</i>				
Polychronicity			0.13**	0.13**
Leader after-hours work-related smartphone use x Polychronicity				0.04*
ΔR^2		0.02**	0.02**	0.002*
R^2	0.01	0.03	0.05	0.05
Adjusted R^2	0.01	0.03	0.05	0.05
F	10.07**	18.5**	22.56**	19.56**

Note: N = 2,257; standardized regression coefficients are reported.

* $p < 0.05$

** $p < 0.01$

Table 3. Study 1. Results of multiple regression analysis (I).

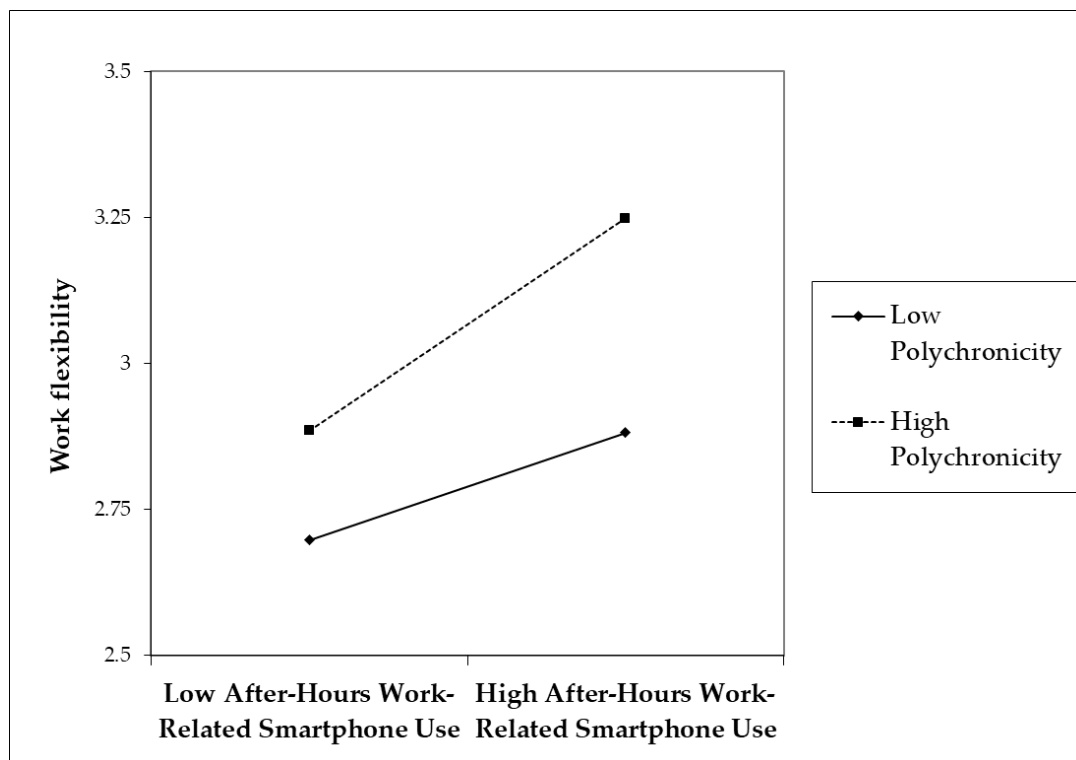


Figure 9. Study 1. Interaction of after-hours work-related smartphone use and polychronicity on work flexibility.

Note. Low (high) values are 1 SD below (above) mean values.

3.4.2.3 Hypothesis 3: Formalization as Moderator Variable

Hypothesis 3 proposes that the relationship between after-hours work-related smartphone use by executives and their work flexibility is moderated by organizational formalization, such that the relationship is positive and strengthens as organizational formalization increases. I analyzed the interaction between executives' after-hours work-related smartphone use and organizational formalization on their perceived work flexibility and found it to be significant ($\beta = 0.09$, $p < 0.05$). It further explained a significant amount of additional variance in perceived work flexibility ($\Delta R^2 = 1\%$, $p < 0.05$, see Model 2d in Table 4). The entire model explains 5% of the variance in work flexibility.

Again, I conducted a simple slopes analysis and plotted the interaction effect at low (-1 SD ; $\beta = 0.08$, $p > 0.01$), average ($\beta = 0.16$, $p < 0.01$), and high ($+1\text{ SD}$; $\beta = 0.24$, $p < 0.01$) levels of the moderator (see Figure 10). The results show that the positive effect of after-hours work-related smartphone use on work flexibility becomes stronger under elevated levels of formalization. Thus, Hypothesis 3 is supported by the data.

Variables	Work flexibility			
	Step 1	Step 2	Step 3	Step 4
	Model 2a	Model 2b	Model 2c	Model 2d
<i>Controls</i>				
Gender	-0.06	-0.07	-0.06	-0.06
Age	0.03	0.04	0.04	0.05
Working hours per week	0.05	0.00	-0.01	-0.01
<i>Predictor</i>				
Leader after-hours work-related smartphone use		0.16**	0.16**	0.16**
<i>Moderator</i>				
Formalization			-0.11**	-0.11**
Leader after-hours work-related smartphone use x Formalization				0.09*
ΔR^2		0.02**	0.01**	0.01*
R^2	0.01	0.03	0.04	0.05
Adjusted R^2	0.01	0.03	0.04	0.04
F	2.10	5.44**	5.86**	5.87**

Note: N = 648; standardized regression coefficients are reported. * $p < 0.05$ ** $p < 0.01$

Table 4. Study 1. Results of multiple regression analysis (II).

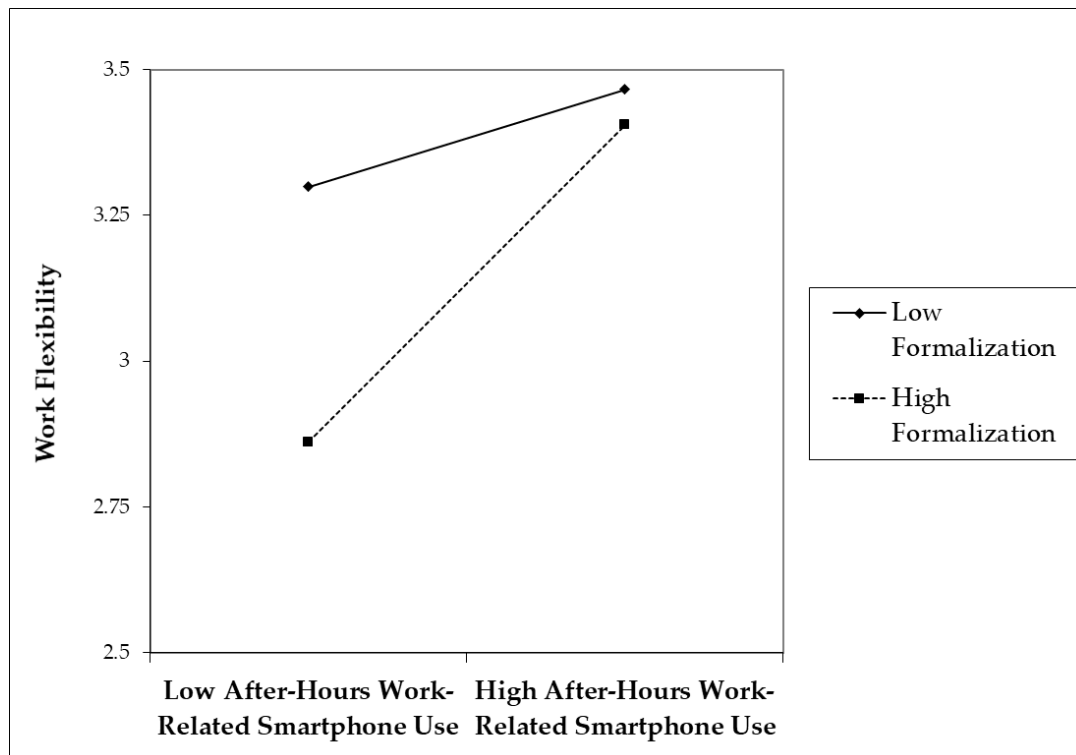


Figure 10. Study 1. Interaction of after-hours work-related smartphone use and formalization on work flexibility.

Note. Low (high) values are 1 SD below (above) mean values.

3.4.2.4 Hypothesis 4: Job Pressure as Moderator Variable

Hypothesis 4 states that the association between after-hours work-related smartphone use by executives and their work flexibility is moderated by job pressure, such that the association is positive and weakens as job pressure increases. I examined the interaction between executives' after-hours work-related smartphone use and their job pressure on their perceived work flexibility and found it to be significant ($\beta = -0.07$, $p < 0.01$). It further explained a significant amount of additional variance in perceived work flexibility ($\Delta R^2 = 0.4\%$, $p < 0.01$, see Model 3d in Table 5). The full model explains 5% of the variance in work flexibility.

In addition, I conducted a simple slopes analysis and plotted the interaction effect at low (-1 SD; $\beta = 0.24$, $p < 0.01$), average ($\beta = 0.17$, $p < 0.01$), and high ($+1$ SD; $\beta = 0.11$, $p < 0.01$) levels of the moderator (see Figure 11). The positive effect of after-hours work-related smartphone use on work flexibility becomes weaker under high levels of job pressure. Consequently, Hypothesis 4 is supported by the data.

<i>Variables</i>	Work flexibility			
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>
	<i>Model 3a</i>	<i>Model 3b</i>	<i>Model 3c</i>	<i>Model 3d</i>
<i>Controls</i>				
Gender	-0.04	-0.04	-0.02	-0.02
Age	0.06*	0.06**	0.06**	0.06**
Working hours per week	0.07**	0.03	0.06*	0.06**
<i>Predictor</i>				
Leader after-hours work-related smartphone use		0.14**	0.17**	0.18**
<i>Moderator</i>				
Job pressure			-0.13**	-0.14**
Leader after-hours work-related smartphone use x Job pressure				-0.07**
ΔR^2		0.02**	0.01**	0.004**
R^2	0.01	0.03	0.04	0.05
Adjusted R^2	0.01	0.03	0.04	0.05
F	9.01**	17.46**	20.58**	18.86**

Note: N = 562; standardized regression coefficients are reported. * $p < 0.05$ ** $p < 0.01$

Table 5. Study 1. Results of multiple regression analysis (III).

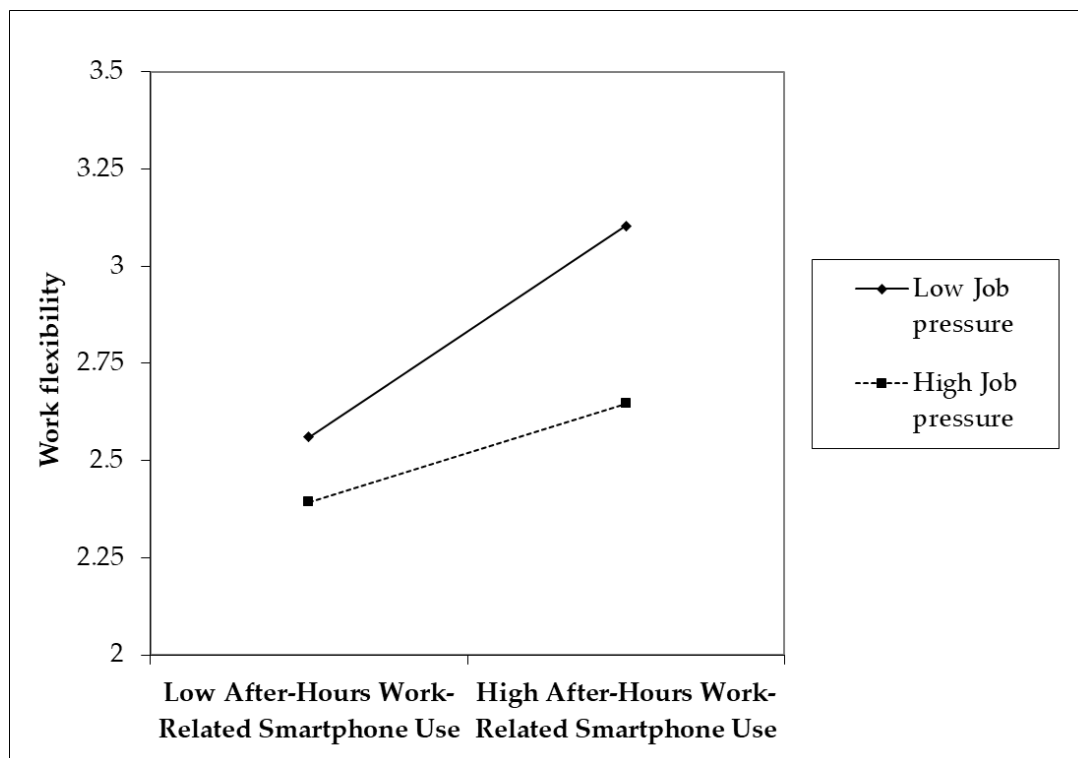


Figure 11. Study 1. Interaction of after-hours work-related smartphone use and job pressure on work flexibility.

Note. Low (high) values are 1 SD below (above) mean values.

3.4.2.5 Hypothesis 5: The Effect of Work Flexibility on Job Performance

To analyze whether there is a positive association between work flexibility and job performance, I conducted a multiple regression analysis with job performance as the dependent variable. As demonstrated in Table 6 (Model 4b) there is a positive effect of work flexibility on job performance ($\beta = 0.13$, $p < 0.01$, $\Delta R^2 = 2\%$, $p < 0.01$), thus supporting Hypothesis 5.

Variables	Job Performance	
	Step 1	Step 2
	Model 4a	Model 4b
<i>Controls</i>		
Gender	-0.02	-0.02
Age	0.05*	0.05*
Working hours per week	0.01	0.00
<i>Predictor</i>		
Leader after-hours work-related smartphone use	-0.03	-0.05*
<i>Mediator</i>		
Work flexibility		0.13**
ΔR^2		0.02**
R^2	0.005	0.02
Adjusted R^2	0.003	0.02
F	2.29	8.52**

Note: N = 1,951; standardized regression coefficients are reported.
 * $p < 0.05$
 ** $p < 0.01$

Table 6. Study 1. Results of multiple regression analysis (IV).

3.4.2.6 Hypothesis 6 (a-c): Test of the Overall Model

Finally, I examined whether polychronic orientation, formalization, and job pressure moderate the indirect effect of an executive's after-hours work-related smartphone use on their job performance mediated via perceived work flexibility. In accordance with Preacher et al.'s (2007) recommendations, I created 10,000 bootstrap samples and examined the significance of the indirect effects at low (-1 SD), average, and high (+1 SD) levels of the respective moderator.

The indices of moderated mediation (Table 7) were found to be significant (Hayes, 2015). This demonstrates that the indirect association between an executive's after-hours work-related smartphone use and his or her job performance through perceived work flexibility is a function of polychronic orientation (*index* = 0.14, *BootSE* = 0.07, *Boot95% CI* = [0.02, 0.28]), formalization (*index* = 0.18, *BootSE* = 0.09, *Boot95% CI* = [0.03, 0.39]), and job pressure (*index* = -0.24, *BootSE* = 0.10, *Boot95% CI* = [-0.45, -0.07]).

As Table 8 illustrates, the positive indirect relationship between an executive's after-hours work-related smartphone use and his or her job performance is strongest under high levels of polychronicity ($B = 0.35$, *BootSE* = 0.09, *Boot95% CI* = [0.19, 0.54]), becomes weaker at the mean ($B = 0.24$, *BootSE* = 0.07, *Boot95% CI* = [0.13, 0.40]) and is weakest at low levels of the moderator ($B = 0.14$, *BootSE* = 0.08, *Boot95% CI* = [0.0028, 0.30]). The findings are in line with Hypothesis 6a.

Furthermore, Table 8 shows, in support of Hypothesis 6b, that the positive indirect relationship between an executive's after-hours work-related smartphone use and his or her job performance is strongest under high levels of formalization ($B = 0.56$, *BootSE* = 0.24, *Boot95% CI* = [0.15, 1.09]), becomes weaker at the mean ($B = 0.32$, *BootSE* = 0.15, *Boot95% CI* = [0.07, 0.68]) and is not significant at low levels of the moderator ($B = 0.08$, *BootSE* = 0.15, *Boot95% CI* = [-0.18, 0.42]).

Finally, Table 8 shows that the positive indirect relationship between an executive's after-hours work-related smartphone use and his or her job performance is strongest under low levels of job pressure ($B = 0.47$, *BootSE* = 0.12, *Boot95% CI*

= [0.26, 0.72]), becomes weaker at the mean ($B = 0.35$, $BootSE = 0.09$, $Boot95\% CI = [0.19, 0.53]$) and is weakest at high levels of the moderator ($B = 0.23$, $BootSE = 0.08$, $Boot95\% CI = [0.09, 0.39]$). Consequently, Hypothesis 6c is supported by the data.

Moderator	Index of moderated mediation	SE	95% CI	
			Lower	Upper
Polychronicity	0.14	0.07	0.02	0.28
Formalization	0.18	0.09	0.03	0.39
Job pressure	-0.24	0.10	-0.45	-0.07

Note: $N = 562 - 1,927$; statistical analyses are based on two-tailed tests. Results are based on 10,000 bootstrap samples.

Table 7. Study 1. Indices of moderated mediation.

Moderator	Values of Moderator		Conditional indirect effects	SE	95% CI	
					Lower	Upper
Polychronicity	-1 SD	(2.25)	0.14*	0.08	0.0028	0.30
	Mean	(3.00)	0.24*	0.07	0.13	0.40
	+1 SD	(3.75)	0.35*	0.09	0.19	0.54
Formalization	-1 SD	(2.67)	0.08	0.15	-0.18	0.42
	Mean	(4.00)	0.32*	0.15	0.07	0.68
	+1 SD	(5.33)	0.56*	0.24	0.15	1.09
Job Pressure	-1 SD	(3.50)	0.47*	0.12	0.26	0.72
	Mean	(4.00)	0.35*	0.09	0.19	0.53
	+1 SD	(4.50)	0.23*	0.08	0.09	0.39

Note: N = 562 - 1927; standardized beta coefficients are reported. Statistical analyses are based on two-tailed tests. Results are based on 10,000 bootstrap samples.

* $p < 0.05$

** $p < 0.01$

Table 8. Study 1. Bootstrapping of conditional indirect effects.

3.5 Discussion

The study aimed to shed light on the association between an executive's after-hours work-related smartphone use and his or her job performance. In detail, I investigated when (i.e., depending on which moderators) and how (i.e., through which processes) an executive's after-hours work-related smartphone use affects their goal accomplishment. The analysis of 4,257 executives from 94 companies shows that an executive's after-hours work-related smartphone use positively affects their personal goal accomplishment through perceived work flexibility. In addition, it was shown that this indirect relationship strengthens as executives' polychronic orientation and the degree of formalization in an organization increases. In contrast, the indirect relationship is weakened when job pressure increases.

3.5.1 Theoretical Implications

The study addressed two gaps in the literature on after-hours ICT usage: First, prior results on the effects of ICT usage after hours were mixed (Schlachter et al., 2018). In particular, the question of whether or not the use of ICTs for business-related purposes outside regular working hours increases individual flexibility was controversially discussed (Barley et al., 2011; Jarvenpaa & Lang, 2005; Richardson & Thompson, 2012). Second, most empirical studies on ICT usage after hours examined employees without personnel responsibilities. Therefore, this study focused on an executive's ICT usage after hours and their perceived work flexibility, which, subsequently, might influence their individual goal accomplishment. The results show that an executive's after-hours work-related smartphone use can help increase their work flexibility. This flexibility translates into increased job performance. Thus, on the one hand, the study confirms the results of previous studies (Ashforth et al., 2000; Richardson & Thompson, 2012).

At the same time, previous findings are extended in several ways: First, a large sample of executives was examined. Focusing on executives instead of employees without leadership responsibilities is crucial in understanding the effects of new communication technologies in the work context. Second, the impact on job performance as individual goal achievement was shown. To the best of the author's knowledge, except for the as yet unpublished work of Fender (2010), no quantitative study examined the relationship between after-hours work-related ICT usage and job performance. Third, the study reveals three critical boundary conditions that either make it easier or more difficult for managers to take advantage of the flexibility offered by ICTs. Polychronic orientation has already been studied several times in the context of executives (Chen, 2020; Souitaris & Maestro, 2010). The fact that polychronicity also plays a role in dealing with modern communication technologies is an essential extension of previous findings. In addition, previous research on ICT use outside regular working hours has shown that the organizational context plays an important role (Schlachter et al., 2018). This finding is strengthened by the results of this study, which showed that executives in highly formalized organizations in particular gain flexibility through ICT usage after hours. Finally, this study contributes to the validation of the job demands-resource model. In accordance with the demand hypothesis, it is shown that job pressure is a job demand that makes it difficult for managers to realize the potential of ICTs after hours.

Lastly, it should be noted that this study examines the *bright side* of ICT usage after hours. The literature review in section 1.3 showed that this side is less researched than the dark side of ICT usage after hours. However, given the ongoing digitalization, it seems increasingly important to show how the potential can be leveraged.

3.5.2 Managerial Implications

The study shows that ICT use after hours is a job resource for managers. Technology allows them to work regardless of time and location, which increases

their flexibility. This increased flexibility, in turn, translates into increased goal achievement. Therefore, organizations are advised to increase the flexibility of their managers. This endeavor is realized on the one hand through modern technologies that enable this flexibility and, on the other hand, through a corresponding organizational culture.

Work flexibility emerged in this study as a central mechanism mediating the effects of after-hours work-related smartphone use on job performance. This finding suggests that executives take advantage of the potential of ICTs when they offer them a gain in flexibility. The fact that the relationship between an executive's smartphone use and his or her work flexibility is influenced by moderator variables suggests further managerial implications. First, polychronically-oriented managers have been shown to benefit more from after-hours ICT use. They do not perceive incoming messages as negative interruptions but like to deal with several things simultaneously. When the job requires the manager in question to be constantly available, it is even more critical that organizations pay attention to polychronic orientation in both personnel selection and staffing.

Second, the finding that managers in highly formalized organizations are more likely to benefit from after-hours ICT use suggests that organizations should establish rules that address after-hours accessibility. In this context, Piszczek (2017, p. 606) advises that "formal policy surrounding after-hours electronic communications expectations [...] should grant additional boundary control to all employees rather than force employees into a particular boundary management strategy." Following this advice, organizations are recommended to establish "digital play rules" that, on the one hand, protect employees and managers from not being able to switch off and, on the other hand, provide them with sufficient freedom to enable the potential of the new communication technologies. Therefore, these play rules must not be overly bureaucratic and restrictive but serve as important road signs (Bruch, 2022). A concrete example

might be an agreement that e-mails can be sent at any time but that the recipient can determine when to respond.

Third, particularly pronounced job demands in the form of job pressure make it difficult for managers to use the flexibility provided by smartphones. One explanation is that managers who are under high pressure and communicate at the same time intensively after hours put too much strain on themselves and thus exhaust their resources. Since executives are often under high stress levels, they are advised to apply strategies that allow them to stay both focused and energized to complete their work tasks (Bruch & Ghoshal, 2004). In this way, managers can effectively deploy their volitional resources and use them for the corresponding goals.

Furthermore, organizations should ensure through job design that their managers are exposed to as few hindrance stressors (which generally are linked with adverse outcomes like emotional exhaustion) as possible (O'Brien & Beehr, 2019). In addition, Hüttermann and Bruch (2019) show that health-related HR practices and leadership influence how workers cope with stress.

3.5.3 Limitations and Directions for Future Research

Although the study has several considerable methodological strengths (including an extensive data set of 4,257 executives from 94 companies), it is not without limitations. These limitations provide avenues for further research in this area.

First, although cross-sectional designs can yield supportive evidence on relationships between variables and have the potential to eliminate alternative explanations (Spector, 2019), I cannot warrant causal inference. Although I have developed my model based on well-established theories (i.e., job demands-resource model and conservation of resources theory), the study design does not allow to rule out the risk of reverse causality. Therefore, I recommend that other

scholars use research designs that will enable to draw more robust causal inferences, such as panel designs or experimental designs.

A second limitation concerns the fact that all variables were assessed from the same source (i.e., the focal manager), which raises the risk of common method bias (Podsakoff et al., 2012). Three characteristics of the design should minimize this risk (Podsakoff et al., 2012): Firstly, common method bias is less of a concern when it comes to moderation effects which underly most of the study's hypotheses (Siemsen et al., 2010). Secondly, different measurement scales were used to lessen the risk of common method bias. And thirdly, the risk of common method bias is also lower when the self-reported measurements cannot be straightforwardly obtained from other informants, which is valid for several variables of the research model (Conway & Lance, 2010). Nonetheless, future research should actively address the risk of common method bias by, for example, using objective measures of after-hours smartphone use and job performance or collecting data at different points in time.

Finally, it should be noted that all data was collected from German companies. Hence, caution should be taken when generalizing the study's findings. To detect potential context-specific effects, I encourage researchers to examine the bright side of ICT usage after hours (especially managers' ICT usage after hours) in other organizations and cultures.

3.5.4 Conclusion

In an increasingly digitalized world of work, the results of the present study should contribute to better usage of ICTs for work purposes outside regular business hours. In particular, the practical implications should support companies in this endeavor. The theoretical implications are intended to stimulate further studies. Given ever more rapidly changing technologies, a constant evaluation of existing knowledge is essential.

4 Study 2: An Organizational-Level Model of Leaders' After-Hours Work-Related Smartphone Use and Employee Well-Being

The use of ICTs in the workplace is increasing (Butts et al., 2015). Related research on employees' ICT usage shows that modern communication technologies can significantly impact their emotional health (B. Wang et al., 2020). Moreover, organizational norms related to communication technologies have been shown to influence employees' ICT usage and well-being (Schlachter et al., 2018). Despite the importance of leaders in shaping such norms and organizational expectations, this influence has not yet been studied (B. Wang et al., 2020). Instead, the effects of leaders' ICT usage on employees' well-being are unclear. Building on climate models of organizational functioning and the conservation of resources theory (Hobfoll, 1998), I develop and subsequently test a firm-level model which explains how and when leaders' ICT usage in the form of after-hours work-related smartphone use is likely to influence employees' well-being. I hypothesized a positive indirect relationship via the new construct climate of universal availability, which is moderated by employees' collective boundary control. Hypotheses were tested using large-scale survey data from 11,703 employees and 99 HR representatives collected in 99 German companies from multiple industries. Findings support the assumed relationship: Leaders' after-hours work-related smartphone use affects collective emotional exhaustion through the climate of universal availability. The positive indirect effect is weakened when employees' collective boundary control is high. Critical implications for future theorizing and research on leaders' ICT usage are discussed.¹

Keywords: leadership; technology; electronic communication; well-being

¹ This study was presented with the permission of the first supervisor of this thesis, Prof. Dr. Heike Bruch, at the 81st Academy of Management Conference. Therefore, the abstract has already been published (Hesse, Huettermann, & Bruch, 2021).

4.1 Introduction

Due to digitalization, the use of information communication technology increases steadily and allows organizations to stay more easily connected to their workforce both during and after working hours (Butts et al., 2015). Especially smartphones have become more critical than ever before in today's business world because of constant technological developments in recent years. Current cell phones allow users to perform work tasks anywhere and anytime (Derks et al., 2015). Thus, they stand like no other medium for the new era of work, characterized by precisely this flexibility (Spreitzer et al., 2017). At a minimum, 25 to 45% of all employees do at least some work tasks electronically at home (Pew Research Center, 2015b; U.S. Bureau of Labor Statistics, 2019).

ICT usage fundamentally changes the nature of jobs and strongly affects employees' work experiences and mental well-being (B. Wang et al., 2020). Although modern ICTs allow an unprecedented degree of flexibility regarding work location and working hours (Ashforth et al., 2000), emerging empirical evidence shows detrimental consequences of ICT usage on employees' emotional health, especially after hours (e.g., Derks et al., 2015). ICT usage comes with constant accessibility, low work detachment, blurred boundaries between the work and the private sphere, and pressure to work more (Belkin et al., 2020; Butts et al., 2015; A. Day et al., 2010). Two shortcomings characterize the rising research on ICT usage.

First, empirical studies on leaders' ICT usage are absent. B. Wang et al. (2020) stress that most research on ICT usage, which in general has produced mixed findings, is centered around employees. Hence, it stays unclear how leaders' ICT usage affects employees' health. The behaviors of leaders have a signal effect on the rest of the organization. They are indicators of what is expected and rewarded in a company. Furthermore, previous studies showed the importance of leaders to employees' well-being (Montano et al., 2017). Considering these

findings, it is striking that there is still a scarcity of research on the effects of leaders' ICT usage on employees' emotional health.

Second, no research thus far has been conducted on ICT usage at the organizational level of analysis. However, these analyses would be particularly important when considering leaders' ICT usage, as leaders can significantly influence the climate in an organization through their behavior (D. V. Day et al., 2014). Organizational climate is defined as "the shared meaning organizational members attach to the events, policies, practices, and procedures they experience and the behaviors they see being rewarded, supported, and expected" (Ehrhart, Schneider, & Macey, 2014, p. 2). Organizational climates are linked to relevant organizational outcomes like employees' collective well-being (e.g., Hüttermann & Bruch, 2019). Although organizational climates are inherently organizational-level constructs, no research thus far has been conducted on ICT usage at the organizational level of analysis. Therefore, it is unclear what impact leaders' ICT usage has on organizational states and outcomes.

Considering the shortcomings of previous research, I build on climate models of organizational functioning and the conservation of resources theory and develop and test an organizational-level model which explains the relationship between leaders' after-hours work-related smartphone use and employees' collective well-being. I argue that if leaders in an organization use their smartphones after hours for work-related tasks, a climate of universal availability emerges. In such a climate, members of the organization hold the shared belief that their company expects them to be available after hours for work-related matters and communicate the completion of work tasks or innovative ideas outside their regular working hours immediately to their superiors. As a result, the central resources of employees are lost or threatened (Hobfoll, 2001); this subsequently increases the risk of emotional exhaustion. Collective emotional exhaustion describes "employees' shared perceptions about how burned out ... their colleagues" are from their occupation (González-Morales, Peiró, Rodríguez, & Bliese, 2012, p. 43).

To prevent resource loss, employees must invest resources (Hobfoll, 1998). Previous research has made the argument that boundary control is a valuable resource for employees because “it allows [them] to more effectively manage their working and non-working time by optimizing the timing and location of work performed to their preferences” (Piszczek, 2017, p. 594). Therefore, I introduce employees’ collective boundary control as a moderating factor and propose that boundary control is a crucial resource that protects employees from burning out collectively.

Overall, this research examines when (i.e., contingent on which boundary conditions) and how (i.e., through which processes) the effect of leaders’ after-hours work-related smartphone use on employee well-being is likely to unfold (as shown in Figure 12). Besides managerial implications concerning the use of ICTs in companies, the study contributes to theory and empirical research on ICT usage in three ways.

First, my study answers B. Wang et al.’s (2020) call to extend prior research on ICTs by examining the effects of leaders’ ICT usage on employees’ well-being. This analysis allows me to deduce both several managerial implications and implications for further research. By developing and testing a comprehensive model on the underlying mechanisms and boundary conditions, I contribute to a better theoretical understanding of how and when leaders’ ICT usage affects employee well-being.

Second, whereas previous research has focused on the individual-level effects of ICT usage, this research illuminates the organizational-level effects. I analyze the role of the organizational climate of universal availability, which turns out to be a central mechanism in terms of employee health. In this context, the organizational-level approach helps to show that leaders’ ICT usage impacts collective well-being in entire organizations. Thereby, I integrate climate models of organizational functioning and effectiveness with the conservation of resources theory. I argue that organizational norms are an inherent organizational-level phenomenon and should be treated as such. Therefore, in contrast to previous

research on organizational norms for availability after hours (W. J. Becker et al., 2021; Belkin et al., 2020; Piszczek, 2017), I analyze those norms with the newly developed construct climate of universal availability at the organizational-level of analysis. By assessing the climate of universal availability in several organizations, I can evaluate the degree of agreement between organizational members.

Third, I show that employees' collective boundary control is a central job resource in the face of ICT usage. Hence, my study adopts a contingency perspective and illuminates boundary control as a critical lever for companies to prevent the adverse effects of leaders' ICT usage. Exposing boundary control as a new job resource is in accordance with the conservation of resources theory and thus further validates the theory in the face of new technological developments.

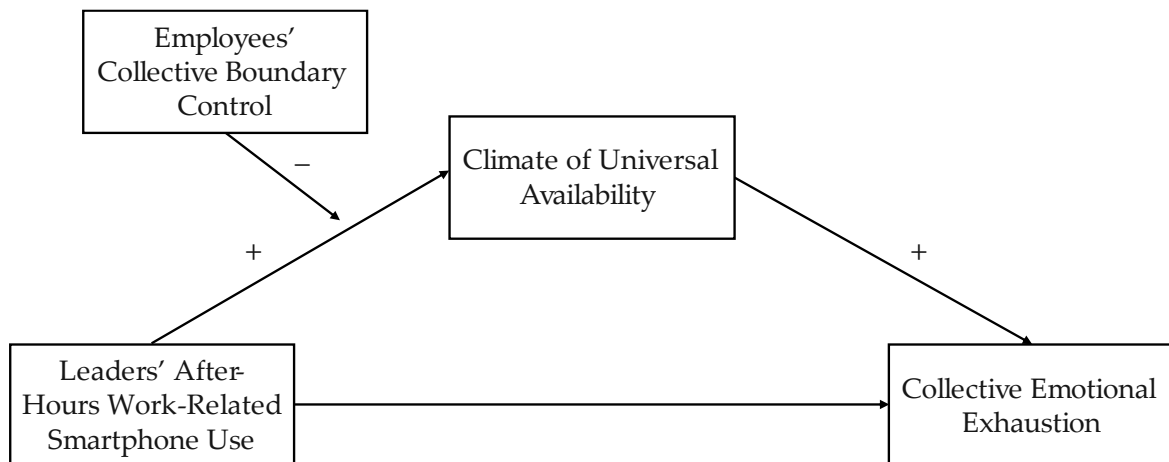


Figure 12. Study 2. The conceptual model of the study

4.2 Theoretical Background and Hypotheses Development

For the development of my theoretical model, I integrate both climate models of organizational functioning and effectiveness (Schneider, Ehrhart, & Macey, 2013) and conservation of resources theory (Hobfoll et al., 2018). This theoretical lens allows me to explain the complex relationship between leaders' after-hours work-related smartphone use and collective well-being in organizations. Overall, these frameworks imply that leaders' after-hours work-related smartphone

use has an impact on the climate of universal availability. This climate should, consequently, influence employee well-being. To prevent resource loss, employees need to build and invest resources (Hobfoll et al., 2018). A valuable resource regarding the work-related use of ICTs after work is boundary control. In the next section, I develop the theoretical rationale and explanation for the proposed model.

4.2.1 The Relationship Between Leaders' After-Hours Work-Related Smartphone Use and the Climate of Universal Availability

4.2.1.1 Leaders' After-Hours Work-Related Smartphone Use

Leaders must communicate more often than employees without leadership responsibility and frequently do so electronically after hours. Job demands at the executive level differ from those at lower organizational levels and vary across organizations (Hambrick et al., 2005). However, what most managerial jobs have in common are high workloads, fragmented tasks that are difficult to plan, and leadership responsibilities (Bruch & Ghoshal, 2004). In addition, leaders must frequently interact with different stakeholders and often do so after hours to meet those demands. In the modern working world, this communication frequently takes place via smartphone. Therefore, I focus on leaders' after-hours work-related smartphone use. The understanding of the construct adopted in this work follows prior conceptualizations (e.g., Derks & Bakker, 2012; Derks, van Mierlo, & Schmitz, 2014). It includes viewing, sending, and answering work-related messages and making work-related phone calls after hours.

Leaders' smartphone use for work after regular business hours has more far-reaching consequences than employees' use because leaders hold influential positions (Behrendt, Matz, & Göritz, 2017). They function as authorities and role models and thus signal what an organization expects and rewards. In other words, leaders shape organizational norms and climates (D. V. Day et al., 2014).

4.2.1.2 *The Climate of Universal Availability*

According to Ehrhart et al. (2014), the perception of a climate arises through a sense-making process: Organizational members conceive and interpret the organizational “events, policies, practices and procedures” they encounter in their work settings (p. 2). They see what their organization rewards and expects. If that information on relevant work events and characteristics is shared sufficiently, the perception of a collective organizational climate emerges. Organizational climate researchers have stressed that employees encounter countless events, practices, and procedures at the workplace (Schneider & Reichers, 1983). From this it follows that organizational settings have several climates with different foci (Schneider et al., 2013). In addition, former research has shown that organizations have the ability to establish norms that influence employees' ICT usage after hours by setting standards and rewarding such behavior (W. J. Becker et al., 2021; Belkin et al., 2020; Butts et al., 2015; Piszczek, 2017). Hence, in accordance with previous research on organizational climates, the new construct *climate of universal availability* is proposed in this study.

A climate of universal availability is defined here as the degree to which members of the organization hold the shared belief that their company expects them to be available after hours for work-related matters and to communicate the completion of work tasks or new ideas outside their regular working hours immediately to their superiors. Thus, employees perceive that universal availability is expected and rewarded by their organization in this climate. Thereby, the study follows the advice of organizational climate researchers (Ehrhart et al., 2014; Schneider et al., 2013) and examines the climate of universal availability, which is a process climate, not a strategy climate. Process climates reflect the degree to which the work setting emphasizes specific internal processes, whereas strategy climates capture the extent to which the work environment emphasizes specific strategic outcomes (Ehrhart et al., 2014). It follows from my conceptualization that the climate of universal availability represents a construct at the organizational level analysis. Kreiner (2006) states that companies

may differ in their expectations regarding availability after regular business hours. Therefore, I propose that organizations differ regarding the climate of universal availability. Furthermore, I suggest that leaders' after-hours work-related smartphone use accounts for the variance in the climate of universal availability.

4.2.1.3 The Climate of Universal Availability as an Outcome of Smartphone Use by Leaders Outside Regular Working Hours

“Leaders and managers often play a critical role in championing work-life boundaries as role models by how they manage themselves; [...] and by fostering an organizational culture of well-being and workforce sustainability.”

(Kossek, 2016, p. 259)

Leaders are agents representing the organization (Eisenberger et al., 2002). Through their behaviors, they enact (or do not enact) policies, practices, and expectations (D. V. Day et al., 2014). Thus, they have a signaling effect on employees in terms of desired behaviors. By using their smartphones after hours for work-related issues, leaders establish organizational norms and send a signal to the rest of the organization. It is informally signaled that after-hours availability is part of this organization and expected. Derks et al. (2015) stress the impact of leaders on norms regarding communication after hours: The authors state by way of example that a leader who sends work-related messages on Sunday afternoons “may unconsciously endorse the opinion that it is normal to work during the weekends” (p. 159).

Organizational members perceive the message sent by the leaders and attach meaning to it. Through daily interactions, a shared understanding of what is expected in the organization regarding availability emerges (Schneider & Reichers, 1983). Employees sense that universal availability is both expected and rewarded by their organization. It is important to note that rewards are not primarily about monetary rewards but also about reputation among colleagues

and opportunities for advancement. Song (2009), for example, showed that unpaid work after hours is mainly seen as a form of investment for knowledge workers. Although W. J. Becker et al. (2021) do not test the influence of leaders on organizational expectations for electronic availability after hours, they argue that “[those expectations] arise out of a normative process that is driven by the behavior of supervisors and peers” (p. 25).

4.2.2 The Moderating Role of Employees’ Collective Boundary Control

By using their smartphones after hours, leaders influence organizational norms and thereby threaten employees’ resources. Hobfoll et al. (2018, p. 113) state that resources of interest are “central to survival or major goal attainment, and common across large groups of individuals.” Leaders’ smartphone use after the regular business has the potential to threaten different resources like free time, spending time with the family, and a feeling of control over one’s life. Conservation of resources theory states that stress occurs when central resources are threatened with loss.

To protect against this resource loss, employees must invest resources (Hobfoll et al., 2018). I.e., resources can be used to offset the loss of other resources. In the context of ICT usage, boundary control has been identified as a critical resource (Piszczyk, 2017). Boundary control is defined as the extent to which a person perceives “that (he/she) (has) control over how (he/she) manages the boundaries between work and family life” (Kossek & Lautsch, 2012, p. 161). The resource allows employees to oversee their time and optimally balance work and non-work tasks (Piszczyk, 2017). Hence, within the frameworks of the organizational guidelines, employees with high boundary control perform work tasks in accordance with their time and location preferences (Kossek & Lautsch, 2012). E.g., someone with a high level of boundary control who prefers to segment work and family tasks can do them one after the other. On the other hand, someone with elevated levels of boundary control who likes to integrate work and private tasks can do them alternately.

Due to their ability to work according to their segmentation preferences, employees with an elevated level of boundary control are neither threatened by leaders' after-hours work-related smartphone use nor regard it as a signal to be always-on after work. ICT usage of leaders' after hours is seen instead as an expression of self-determined work.

Contrariwise, leaders' after-hours work-related smartphone use threatens employees with low boundary control. These employees are not able to detach themselves after hours. Instead, they perceive leaders' ICT use after hours as a cue to be available also after the regular business hours. This reasoning is in agreement with prior research, which defined low boundary control as a job demand (Piszczek, 2017). Also, the conservation of resources theory explicitly states that "those with greater resources are less vulnerable to resource loss and more capable of resource gain. Conversely, individuals and organizations who lack resources are more vulnerable to resource loss and less capable of resource gain" (Hobfoll et al., 2018, p. 106).

Therefore, I propose that boundary control is an important resource in modern work contexts and that it spreads among members in a firm via crossover effects. Previous research has shown that there is a transfer of positive resources between close partners, which might cause "a spiral from one individual to his or her partner and from both of them to their respective team members, potentially leading to what is described as an engaged organization or a vigorous organization" (Hobfoll et al., 2018, p. 110). Also, the spread of boundary control within a company follows this logic.

According to the self-expansion model of motivation and cognition (Aron, Aron, Tudor, & Nelson, 1991; Aron, Lewandowski, Mashek, & Aron, 2013), people strive to increase their potential efficacy. The goal is the same as in conservation of resources theory, namely, to accumulate one's resources to achieve goals. Boundary control is such a resource as it helps employees to manage modern job demands (Kossek & Lautsch, 2012). The self-expansion model further states that people compare their current self with their potential self. The

latter includes in close work relationships the resources, identities, and perspectives of both the self and the co-worker. A motivation to self-expand occurs when the potential self signifies an improvement on the current self. People are more likely to incorporate another person into their self if they anticipate that self-expansion will help them to gain untapped resources. Therefore, it is likely that employees include colleagues in their potential self who possess a high degree of boundary control, as they see that those colleagues manage their work and private time more effectively. The comparison with colleagues who have a high boundary control is the starting point for the spread of the resource in a company and the reason why it is conceptualized here as a collective construct. Building on my argumentation, I propose the following hypothesis:

Hypothesis 1: The relationship between leaders' after-hours work-related smartphone use and the climate of universal availability is moderated by employees' collective boundary control, such that the relationship is positive and weakens as employees' collective boundary control increases.

4.2.3 The Climate of Universal Availability and Collective Emotional Exhaustion

Former research has shown that organizational climates have organizational-level consequences (Schneider et al., 2013). I argue that this applies especially to the climate of universal availability because it is likely to trigger two processes described in the conservation of resources theory, which leads to collective emotional exhaustion. On the one hand, central resources are lost due to the climate of universal availability. On the other hand, central resources are threatened. Both processes cause stress and emotional exhaustion in the long run (Hobfoll et al., 2018). This reasoning is consistent with previous research on ICTs, which has also acknowledged the importance of organizational norms for employees' technology use and mental health states (Belkin et al., 2020; Fender, 2010; Piszczek, 2017).

First, in organizations with a climate of universal availability, employees are expected to be accessible also after hours for work-related tasks. Employees likely behave in a manner consistent with the climate to meet organizational expectations and norms. By being available also after hours, employees want to appear responsive and motivated (Piszczek, 2017). By communicating work results to their supervisors after regular business hours, they expect benefits such as a better relationship with them, a promotion, or to get a permanent position in the company (Derks et al., 2015). This argument is supported by several studies which find that the level of technology-assisted extra-work an employee engages in is driven by organizational expectations (W. J. Becker et al., 2021; Belkin et al., 2020; L. Duxbury, Higgins, Smart, & Stevenson, 2014; Fenner & Renn, 2010; Matusik & Mickel, 2011; Piszczek, 2017).

When employees use technology after hours to do extra work, they lose central resources: ICT usage after hours increases the total amount of working hours and reduces the necessary time to recover after work (Derks & Bakker, 2012). Moreover, it lowers the perceived control over off-job activities (Dettmers, Vahle-Hinz, Bamberg, Friedrich, & Keller, 2016) and induces conflicts between work and private life (Boswell & Olson-Buchanan, 2007). According to the conservation of resources theory, losing resources (i.e., time to recover, autonomy, and family time) causes stress reactions and, ultimately, emotional exhaustion (Hobfoll et al., 2018).

Piszczek (2017), for example, shows that organizational after-hours communication expectations are linked to individual emotional exhaustion via technology use. Moreover, he stresses that the motive why employees use their smartphones after hours matters: “When technology use is the result of after-hours electronic communications expectations, employees simultaneously experience higher job demands (in the form of job pressure associated with the expectation of working after hours) and lower job resources” (p. 597). Thus, if employees use their smartphones after hours because the climate of universal availability pressures them, negative consequences are more likely.

Employees' work-related smartphone use after hours might also yield some resource gains. For instance, employees might receive vital information which heightens their job performance. However, according to the conservation of resources theory, there is a primacy of loss principle: "Resource loss is disproportionately more salient than resource gain" (Hobfoll et al., 2018, p. 106). I.e., employees will focus on resource loss instead of potential resource gains.

Second, in organizations with a climate of universal availability, employees' resources are threatened, as they constantly feel under pressure. This pressure, in turn, will directly influence their stress level, which will manifest in emotional exhaustion. Even if employees do not behave consistently with the climate of universal availability and do not work after hours, they will feel under pressure (W. J. Becker et al., 2021). For example, they might perceive an increase in performance standards and that their organization expects them to do extra work after hours. They feel drained from their work because they cannot fulfill this expectation. Furthermore, receiving work-related messages after hours is a job demand in itself, which interferes with employees' job autonomy.

Previous research at the individual level of analysis has shown that organizational expectations for e-mail monitoring after hours have detrimental effects on employee well-being. For instance, W. J. Becker et al. (2021) find that such norms lead to electronic communication-related anxiety (e-anxiety) because employees suffer attention allocation conflict. E-anxiety, subsequently, negatively affects employee well-being and partnership satisfaction. Moreover, Belkin et al.'s study (2020) shows that organizational expectations for e-mail monitoring after hours are directly linked to individual emotional exhaustion. Therefore, I predict:

Hypothesis 2: The climate of universal availability is positively related to collective emotional exhaustion.

4.2.4 A Moderated Mediation Model of Leaders' After-Hours Work-Related Smartphone-Use and Collective Emotional Exhaustion

Building on my prior argumentation, I propose that the climate of universal availability mediates the relationship between leaders' after-hours work-related smartphone use and collective emotional exhaustion; furthermore, I expect that the indirect effect of leaders' after-hours work-related smartphone use on collective emotional exhaustion through the climate of universal availability is contingent on employees' collective boundary control. Therefore, I propose the following hypothesis:

Hypothesis 3: Employees' boundary control moderates the indirect relationship between leaders' after-hours work-related smartphone use and collective emotional exhaustion, as mediated by the climate of universal availability. The indirect relationship is positive and weakens as employees' collective boundary control increases.

4.3 Methods

4.3.1 Data Collection and Sample

I tested my hypotheses using a data set of 99 German companies. The data collection was conducted in 2019 as a part of a larger project in collaboration with a benchmarking agency.

The companies included in the analysis can be allocated to four different industries: service (46%), production (29%), trade (12%), and finance (13%). On average, each firm employed 284 employees ($SD = 334$) when the data were collected. Therefore, most companies surveyed (60.6%) can be classified as small to medium-sized enterprises (SMEs) with fewer than 250 employees. SMEs account for 99% of all companies in Germany and employ 57.2% of the country's workforce (German Federal Office of Statistics, 2020; Soellner, 2014). Moreover, SMEs account for 35% of Germany's national turnover (Soellner, 2014). Also,

from a global angle, small and medium-sized enterprises are essential to examine, as, in many “economies, the majority of jobs are provided by” them (Ardic, Mylenko, & Saltane, 2011, p. 2). In addition, Ardic et al. (2011) note that “in high-income countries, formal SMEs contribute to 50 percent of GDP on average” (p.2). Hence, SMEs are a very relevant population to study. A total of 11,703 respondents participated in the survey with a within-organization response rate of 73%. Of the participants, 54% were male, 39 years old on average ($SD = 4.28$), and the average company tenure was seven years ($SD = 4.6$). In order to minimize the risk of common method bias (Podsakoff et al., 2003; Podsakoff et al., 2012), this research relies on four different data sources within each company: three unique employee groups as well as the HR executive. The latter provided information on company size, industry affiliation, and staffing shortage, which were included as control variables in the analysis. Moreover, all employees of the participating firms were invited to the study via an email explaining the purpose of the research project and providing a link to a web-based survey.

Data were gathered from the employees utilizing a split-sample design (D. Rousseau, 1985): An algorithm randomly assigned participants into three groups that responded to different survey versions (survey versions 1-3). This procedure was chosen to reduce the number of questions per respondent and thus keep the response rate as high as possible. Each survey version included different variables of the theoretical model: leaders’ after-hours work-related smartphone use and employees’ collective boundary control were assessed in employee survey version 1, the climate of universal availability in employee survey version 2, and collective emotional exhaustion in employee survey version 3. In addition, all survey versions contained questions on respondents’ age, their company tenure, and organizational ICT usage (i.e., the percentage of employees’ daily work communication relying on virtual communication media like telephone, email, video conference, messenger apps, forums, social networks). These variables, obtained from all participating employees, served as control variables in the analyses.

4.3.2 Measures

Unless otherwise stated, all variables were assessed on 5-point Likert scales ranging from 1 “strongly disagree” to 5 “strongly agree.” Variables were measured at the individual level and later aggregated to the organizational level. To provide justification for the aggregation, I calculated intraclass correlation coefficients (ICC_1 and ICC_2 ; Bliese, 2000) and the $r_{wg(j)}$ index (James, Demaree, & Wolf, 1984). I relied on commonly accepted statistical thresholds in the research methods literature for all indices (Bliese, 2000; LeBreton & Senter, 2008; Smith-Crowe, Burke, Cohen, & Doveh, 2014).

Leaders’ after-hours work-related smartphone use ($\alpha = 0.94$; $ICC_1 = 0.17$, $ICC_2 = 0.89$, *median* $r_{wg(j)} = 0.66$).² Leaders’ after-hours work-related smartphone use was assessed via an adapted version of Derks and Bakker’s (2012) four-item smartphone use scale in employee survey version 1. Participants were asked to evaluate to which extent their direct supervisor uses their smartphone after hours for work purposes. In contrast to the original scale, items were explicitly framed regarding *leaders’* smartphone use after hours for work purposes. Exemplary items include “My direct supervisor uses his/her smartphone intensively after work hours for work-related purposes” and “My direct supervisor also responds to work-related messages on his/her smartphone during the evening hours.” All items were averaged and aggregated to the organizational level.

Employees’ collective boundary control ($\alpha = 0.77$; $ICC_1 = 0.06$, $ICC_2 = 0.77$, *median* $r_{wg(j)} = 0.82$). To capture employees’ collective boundary control, workers were requested in survey version 1 to rate three selected items from the boundary control scale by Kossek et al. (2012). Sample items include “I control whether

² I used the guidelines of Smith-Crowe et al. (2014) to test the statistical significance of the $r_{wg(j)}$ indices. Following the authors recommendations, I calculated sample-specific cutoff values based on the uniform null distribution, my sample size and the number of response options of my items. The observed $r_{wg(j)}$ indices were greater than the relevant tabled values which indicates statistical significance ($p < 0.05$). Thus, following the guidelines by Smith-Crowe and colleagues (2014), these findings indicate that aggregating individual responses to the organizational level is warranted for the study’s variables.

I am able to keep my work and personal life separate” and “I control whether I have clear boundaries between my work and personal life.” The three items were averaged and aggregated to the organizational level.

Climate of universal availability ($\alpha = 0.96$; $ICC_1 = 0.12$, $ICC_2 = 0.82$, *median* $r_{wg(j)} = 0.90$). To measure the climate of universal availability, workers were invited in survey version 2 to provide their assessment of a newly developed six-item scale. The scale was designed based on previous measures of organizational expectations for electronic availability after hours (Belkin et al., 2020; Fender, 2010; Piszczek, 2017). Exemplary items include “The people working in this organization are expected to answer after-hours contacts immediately” and “The people working in this organization are expected to be responsive to organizational communication after hours.” All the items were averaged and aggregated to the organizational level.

Collective emotional exhaustion ($\alpha = 0.98$; $ICC_1 = 0.16$, $ICC_2 = 0.88$, *median* $r_{wg(j)} = 0.84$). A five-item scale by González-Morales et al. (2012) was used to gather employees’ collective emotional exhaustion. Sample items include: “Some people working in this company feel that they are at the end of their rope” and “People working in this company feel used up at the end of the workday.” As for the other measures, items were averaged and aggregated to the organizational level.

Control variables. I included six control variables to lower the risk of omitted variable bias (T. E. Becker et al., 2016). First, I accounted for company size (i.e., number of employees) due to its empirical link to organizational members’ attitudes (Pierce & Gardner, 2004). I performed a log transformation, as this variable was skewed. Second, I considered companies’ industry affiliation due to its implications for company performance (Datta, Guthrie, & Wright, 2005) and employees’ affect (Agarwal, Sarkar, & Echambadi, 2002; Knight et al., 2018). I entered three industry dummy variables (i.e., trade, service, and production) with the finance industry as the reference category. Third, I included organizational ICT usage as a control variable. Elevated levels of work communication

relying on virtual communication media could influence both the climate of universal availability and collective emotional exhaustion. I used an adapted version of Maynard, Mathieu, Rapp, and Gilson's (2012) single-item measure to assess this construct. Respondents were asked to which percentage of their daily work communication relied on digital communication media such as email, video conferences, and messenger apps on a scale ranging from 0% to 100%. The aggregation was justified by the results of the aggregation statistics ($ICC_1 = 0.10$, $ICC_2 = 0.94$, $median\ r_{wg} = 0.79$). Fourth, I controlled for possible staffing shortage, as previous research has shown that understaffing is related to employees' well-being (Weigl, Schmuck, Heiden, Angerer, & Müller, 2019). HR executives were requested to rate the item "We are currently incapable of carrying out new projects due to a lack of personnel" on a Likert scale ranging from 1 (totally disagree) to 7 (totally agree). Fifth, I controlled for participants' average age, as this measure has been empirically linked to employee well-being (Bonsdorff et al., 2018). Finally, I included participants' average company tenure, as this variable might affect climate perceptions and collective well-being (Ng & Feldman, 2008b).

4.3.3 Convergent and Discriminant Validity

I ran a confirmatory factor analysis (CFA) and specified four factors (one respective factor for leaders' after-hours work-related smartphone use, employees' collective boundary control, the climate of universal availability, and collective emotional exhaustion). Following the recommendations for sample sizes below 200 (Hu & Bentler, 1999), I evaluated model fit by using the standardized root mean square residual (SRMR) together with two incremental fit indices – the comparative fit index (CFI) and the incremental fit index (IFI). The results of the CFA indicated acceptable fit ($\chi^2 = 381.34$, $df = 129$, $p < 0.001$, $CFI = 0.9$, $IFI = 0.9$, $SRMR = 0.072$). As expected, all items loaded significantly to their respective latent variables.

4.3.4 Analytical Techniques

To test the theoretical model, I relied on hierarchical linear regression analysis. I mean-centered independent variables prior to analysis to simplify interpretation (L. S. Aiken & West, 1991) and alleviate the risk of multicollinearity (Iacobucci et al., 2016). The interaction effect was plotted at low (1 SD below the mean) and high (1 SD above the mean) values of the moderator (employees' collective boundary control). To test for the predicted conditional indirect effects, I followed Preacher et al.'s (2007) recommendations. With this approach, the point estimate of the indirect effect of a predictor on a criterion variable through the mediating variable is investigated for altered values of the moderator variable using a bootstrapping procedure (with 10,000 bootstrap samples) (Hüttermann & Bruch, 2019). In alignment with recommendations from the methodological literature (Hayes, 2018), the following values of the moderator were used: one standard deviation below the mean, the mean, and one standard deviation above the mean.

4.4 Results

4.4.1 Descriptive Statistics and Intercorrelations

Table 9 shows intercorrelations and descriptive statistics for all variables. As expected, leaders' after-hours work-related smartphone use correlates with the climate of universal availability ($r = 0.63, p < 0.01$), which in turn correlates with collective emotional exhaustion ($r = 0.32, p < 0.01$).

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1.	Leaders' after-hours work-related smartphone use	3.14	0.57											
2.	Climate of universal Availability	1.91	0.53	0.63**										
3.	Collective emotional exhaustion	2.42	0.49	0.14	0.32**									
4.	Employees' collective boundary control	4.08	0.35	0.00	-0.37**	-0.24*								
5.	Company size (log)	2.21	0.50	-0.14	-0.11	0.35**	-0.02							
6.	Industry (service)	0.46	0.50	0.33**	0.19	-0.13	0.08	-0.14						
7.	Industry (production)	0.29	0.46	-0.33**	-0.10	0.00	-0.09	0.14	-0.60**					
8.	Industry (trade)	0.12	0.33	0.05	-0.12	0.17	0.02	-0.01	-0.35**	-0.24*				
9.	Organizational ICT usage	41.23	13.92	0.27**	0.16	0.10	0.08	0.17	0.12	-0.28**	0.06			
10.	Staffing shortage	3.29	1.70	-0.15	-0.08	0.07	-0.16	0.07	0.28**	-0.01	-0.14	-0.03		
11.	Mean age	39.10	4.28	-0.23*	-0.10	-0.02	-0.04	0.07	-0.19	0.21*	-0.17	-0.19	-0.02	
12.	Mean tenure	7.16	4.60	-0.19	-0.01	0.08	-0.08	0.14	-0.33**	0.15	-0.01	-0.17	-0.05	0.56**

Note. N = 99 companies.

* $p < 0.05$

** $p < 0.01$

Table 9. Study 2. Means, standard deviations, and correlations.

4.4.2 Hypothesis Testing

Table 10 shows the results of the hierarchical linear regression analysis. Initially, I analyzed the effect of leaders' after-hours work-related smartphone use on the climate of universal availability: To this end, I first ran a controls-only model (see Table 10, Model 1a), which explained 4% of the variance in the climate of universal availability. In the second step, leaders' after-hours work-related smartphone use was entered into the regression equation. Here, I found a positive effect of leaders' after-hours work-related smartphone use on the climate of universal availability ($\beta = 0.67, p < 0.01, \Delta R^2 = 0.33, p < 0.01$; see Table 11, Model 1b).

Hypothesis 1 proposes that the association between leaders' after-hours work-related smartphone use and the climate of universal availability is moderated by employees' collective boundary control, such that the association is positive and weakens as employees' collective boundary control increases. To test this hypothesis, I examined the interaction between leaders' after-hours work-related smartphone use and employees' collective boundary control on the climate of universal availability and found it to be significant ($\beta = -0.36, p < 0.01$). It further explained a significant amount of incremental variance in the climate of universal availability ($\Delta R^2 = 0.09, p < 0.01$, see Model 1d in Table 10). The complete model explains 63% of the variance in the climate of universal availability.

I then conducted a simple slopes analysis and plotted the interaction effect at low ($-1 SD; \beta = 0.68, p < 0.01$), average ($\beta = 0.51, p < 0.01$), and high ($+1 SD; \beta = 0.34, p < 0.01$) levels of the moderator (see Figure 13). The positive effect of leaders' after-hours work-related smartphone use on the climate of universal availability becomes weaker under high levels of employees' collective boundary control.

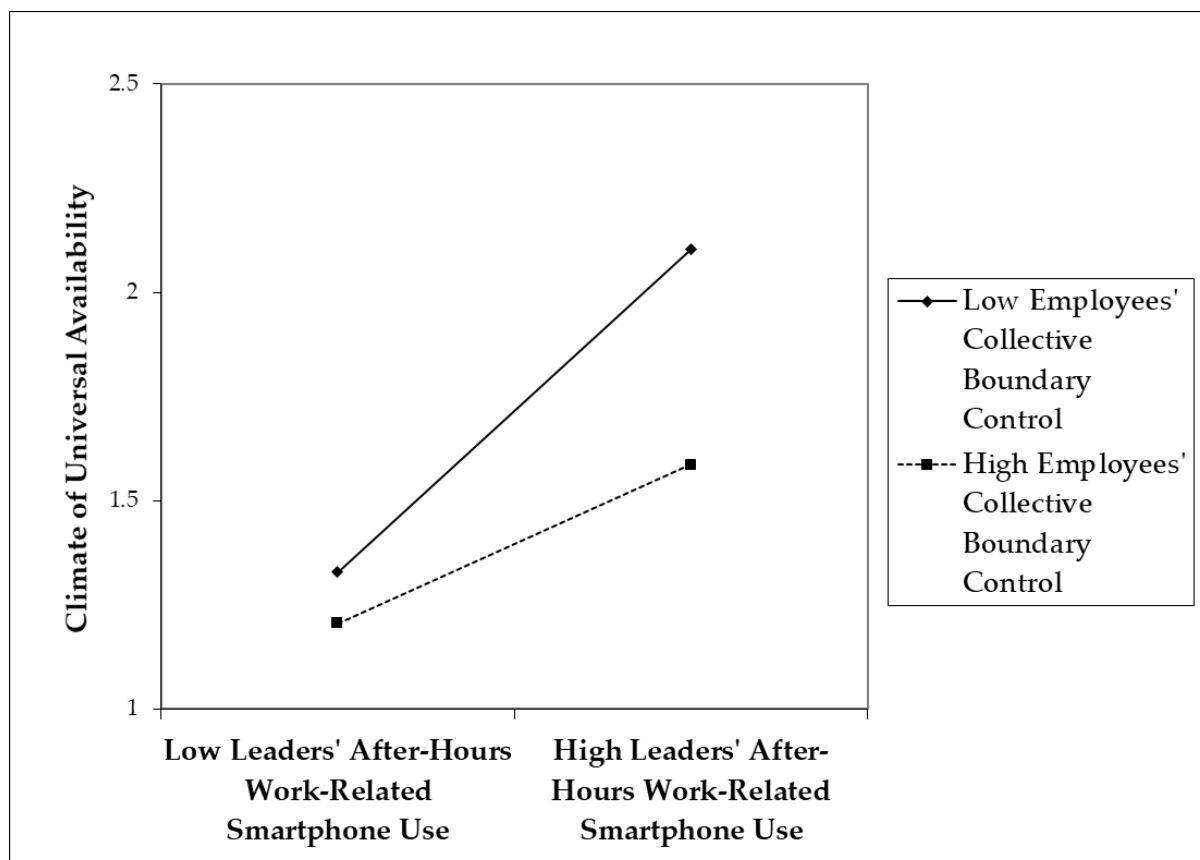


Figure 13. Study 2. Interaction of leaders' after-hours work-related smartphone use and employees' collective boundary control on the climate of universal availability.

Note. Low (high) values are 1 SD below (above) mean values.

To examine whether there is a positive relationship between the climate of universal availability and collective emotional exhaustion, I ran a multiple regression analysis, including collective emotional exhaustion as the dependent variable. As demonstrated in Table 10 (Model 2b) there is a positive association between the climate of universal availability and collective emotional exhaustion ($\beta = 0.46, p < 0.01, \Delta R^2 = 0.12, p < 0.01$), thus supporting Hypothesis 2.

Finally, I examined whether employees' collective boundary control moderates the indirect effect of leaders' after-hours work-related smartphone use on collective emotional exhaustion mediated via the climate of universal availability (Hypothesis 3). In accordance with Preacher et al.'s (2007) recommendations, I created 10,000 bootstrap samples and examined the significance of the indirect effect at low (-1 SD), average, and high (+1 SD) levels of the moderator.

Variables	Climate of Universal Availability				Collective Emotional Exhaustion	
	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2
	Model 1a	Model 1b	Model 1c	Model 1d	Model 2a	Model 2b
<i>Controls</i>						
Company size (log)	-0.12	-0.05	-0.06	-0.02	0.36**	0.38**
Industry (service)	0.32	0.03	0.10	0.14	-0.21	-0.23
Industry (production)	0.16	0.12	0.13	0.12	-0.08	-0.13
Industry (trade)	-0.02	-0.12	-0.09	-0.09	0.09	0.15
Organizational ICT usage	0.19	0.04	0.07	0.00	-0.03	-0.05
Staffing shortage	-0.15	0.02	-0.07	-0.07	0.16	0.15
Mean age	-0.14	-0.05	-0.05	0.05	0.00	0.02
Mean tenure	0.19	0.16	0.14	0.13	0.02	-0.05
<i>Predictor</i>						
Leaders' after-hours work-related smartphone use		0.67**	0.63**	0.54**	0.26*	-0.05
<i>Moderator</i>						
Employees' collective boundary control			-0.38**	-0.30**		
Leaders' after-hours work-related smartphone use x Employees' collective boundary control				-0.36**		
<i>Mediator</i>						
Climate of universal availability						0.46**
ΔR^2		0.33**	0.13**	0.09**		0.12**
R^2	0.12	0.45	0.58	0.67	0.22	0.33
Adjusted R^2	0.04	0.39	0.54	0.63	0.14	0.26
F	1.48	8.04**	12.3**	16.4**	2.71**	4.35**
Note: N = 99 companies; standardized regression coefficients are reported.						
* p < 0.05						
** p < 0.01						

Table 10. Study 2. Results of multiple regression analysis

Table 11 shows that the index of moderated mediation is significant (Hayes, 2015). This indicates that the indirect association between leaders' after-hours work-related smartphone use and collective emotional exhaustion through the climate of universal availability is a function of employees' collective boundary control ($index = -0.21$, $BootSE = 0.11$, $Boot95\% CI = [-0.47, -0.06]$). As Table 12 illustrates, the positive indirect relationship is strongest under low levels of employees' collective boundary control ($B = 0.25$, $BootSE = 0.08$, $Boot95\% CI = [0.12, 0.46]$), becomes weaker at the mean ($B = 0.22$, $BootSE = 0.08$, $Boot95\% CI = [0.10, 0.40]$) and is weakest at high levels of the moderator ($B = 0.17$, $BootSE = 0.07$, $Boot95\% CI = [0.07, 0.33]$). Thus, Hypothesis 3 is also supported by the data.

	Index of moderated mediation	SE	95% CI	
			<i>Lower</i>	<i>Upper</i>
Employees' collective boundary control	-0.21	0.11	-0.47	-0.06

Note: N = 99 companies. Statistical analyses are based on two-tailed tests. Results are based on 10,000 bootstrap samples.

Table 11. Study 2. Index of moderated mediation.

Values of Employees' collective boundary control		Conditional indirect effects	SE	95% CI	
				<i>Lower</i>	<i>Upper</i>
-1 SD	(3.91)	0.25*	0.08	0.12	0.46
Mean	(4.08)	0.22*	0.08	0.10	0.40
+1 SD	(4.31)	0.17*	0.07	0.07	0.33

Note: N = 99 companies; Standardized beta coefficients are reported. Statistical analyses are based on two-tailed tests. Results are based on 10,000 bootstrap samples.

* $p < 0.05$

** $p < 0.01$

Table 12. Study 2. Bootstrapping of conditional indirect effects

4.5 Discussion

This research aimed to shed light on the relationship between leaders' after-hours work-related smartphone use, the climate of universal availability, and collective emotional exhaustion. Results from my study of 99 companies and 11,703 employees reveal that leaders' after-hours work-related smartphone use is indirectly linked to well-being in the form of collective emotional exhaustion. My findings indicate that this relationship is mediated by the climate of universal availability and moderated by employees' collective boundary control. Leaders' after-hours work-related smartphone use positively affects collective emotional exhaustion through the climate of universal availability. This indirect relationship weakens as employees' collective boundary control increases.

4.5.1 Theoretical Implications

My study answers calls to extend prior research on information and communication technology usage in companies by illuminating the effect of leaders' ICT usage on employees' well-being (B. Wang et al., 2020). In line with previous leadership studies (Montano et al., 2017), I show that leader behavior significantly influences employees' well-being. The fact that leaders' ICT usage after hours is particularly important for collective employee well-being is an important extension of prior research. Moreover, I developed and assessed a comprehensive model revealing underlying mechanisms and a relevant boundary condition to contribute to a better theoretical understanding of how and when leaders' ICT usage affects employee well-being.

Furthermore, whereas previous research has focused on individual-level effects of ICT usage, the study shows that it is essential to examine organizational-level effects. The analysis revealed that the organizational climate of universal availability is a central mechanism through which leaders' ICT usage affects employee well-being. Thereby, I integrated climate models of organizational functioning and effectiveness with the conservation of resources theory.

To conclude, my analysis showed that employees' collective boundary control is a central job resource in the digital age. It prevents harmful effects of leaders' work-related ICT usage after hours, indicating that it is crucial that employees feel they can choose whether they can separate work and private life. Additionally, this study strengthens the conservation of resources theory as a valuable analytical lens in the face of new technological developments.

4.5.2 Managerial Implications

My research shows that leaders who use their smartphones for work-related tasks after hours contribute to creating an organizational climate in which employees hold the shared belief that their company expects availability for work-related matters even after hours. The climate of universal availability, in turn, acts as an "invisible leash" (Belkin et al., 2020). Such a climate fosters pressure on the part of the employees, leading them to experience a phenomenon called the "new night shift," implying that "[...] after normal business hours employees log back on to work (or never log off) in order to address incoming electronic communications" (Butts et al., 2015, p. 763). Over time, this drains employee resources, resulting in collective emotional exhaustion. Therefore, organizations and managers should be sensitized to the potentially detrimental consequences of leaders' ICT usage after hours for employees' well-being.

Many companies are blurring their employees' boundaries between work and private spheres through organizational norms (Derks et al., 2015), sometimes unconsciously. Clearly defined company rules for the use of electronic communication media could serve as security for employees (for a more detailed description of the proposed "digital play rules," see section 3.5.2). In view of the harmful effects of the climate of universal availability, organizations should not require their employees to be 'always-on.'

Managing ICT usage is no longer a choice but has become a reality in organizations around the globe. My study shows that boundary control acts as an essential lever for companies to prevent employees from collective burnout due to a

prevailing climate of universal availability. Considering collective emotional exhaustion is important, given that “when people’s resources are outstretched or exhausted, they enter a defensive mode to preserve the self, which is often defensive, aggressive, and may become irrational” (Hobfoll et al., 2018, p. 106). Collective emotional exhaustion further bears the danger of resource loss cycles: “Because resource loss is more powerful than resource gain, and because stress occurs when resources are lost, at each iteration of the stress spiral, individuals and organizations have fewer resources to offset resource loss, and these loss spirals gain in momentum as well as magnitude” (Hobfoll et al., 2018, p. 106). I, therefore, recommend that organizations strengthen employees’ boundary control through targeted employee training.

Finally, organizations should also consider software solutions to create boundaries between work and life. A recent Microsoft report, for instance, recommends *background removal* and *noise cancellation*. Moreover, they recommend a nudging approach. For example, through “[delayed] mail delivery for after-hours mails,” “[clarification of] mail urgency when sent after hours, and a [reduction in] after-hour meetings” (Microsoft, 2021a, p. 19).

4.5.3 Limitations and Directions for Future Research

While my research demonstrates several important methodological strengths (including a data set comprised of large-scale organizational-level data from 99 companies and 11,703 employees, a split-sample design with information from three unique employee groups and HR executives), it is not without limitations. These limitations open the door for further research in this area.

First, although correlational designs can yield supportive evidence on associations between variables and have the potential to eliminate alternative explanations (Spector, 2019), I cannot warrant causal inference. Although I have developed my model on the basis of sound theoretical theory (i.e., climate models of organizational functioning and conservation of resources theory), my research design does not allow for ruling out the risk of reverse causality. Since this is

one of the first studies to examine the effects of leaders' ICT usage, I echo the call of B. Wang et al. (2020) to continue research in this fruitful direction and address the issue of causality through more rigorous designs.

Second, caution should be taken when generalizing my findings, as all data was collected from German firms. I encourage researchers to examine leaders' ICT usage, the effects of the climate of universal availability, and the role of collective boundary control in other cultural environments to determine whether leaders' ICT usage is experienced differently in other contexts.

A third limitation relates to the measurement of leaders' after-hours work-related smartphone use. My analysis is based solely on subjective employee data. Further research could benefit from using an objective measure of smartphone usage after hours.

4.5.4 Conclusion

The study demonstrates that leaders' ICT usage after hours fuels a climate of universal availability, which has detrimental effects on employees' collective well-being. Boundary control weakens this indirect relationship. Through my findings, I hope to provide guidance for organizations' information and communication technology practices and that my study will stimulate further studies in this promising area of research.

5 Study 3: How Organizations Foster Collective Boundary Control and What is in It for Them

Boundaries between work and private domain are becoming increasingly blurred. Recent studies show that this is often accompanied by decreasing levels of individual well-being (Kossek, 2016). Research has identified boundary control as a crucial resource, allowing employees to cope better with increasingly fluid boundaries. So far, however, it is unclear whether these results translate to the collective level. And if so, what are the antecedents and performance implications of collective boundary control? Additionally, it remains unclear how the organizational context influence individual-level effects of boundary control. Given the shortcoming of previous research, I draw on the conservation of resources theory and design and test a multi-level model which explains the antecedents and performance implications of collective boundary control. Moreover, the model indicates under which context the potential of individual boundary control is realized. I argue that both competence-enhancing HR systems and decentralization foster collective boundary control. Collective boundary control is hypothesized to foster organizational performance. Finally, it is expected that organizational ICT usage moderates the effects of an individual's boundary control on his or her well-being. Hypotheses were tested using large-scale, multi-level data from 8,273 employees, 148 HR representatives, and 144 top management teams from 154 German firms from several industries. My results support the assumed associations: Competence-enhancing HR systems and decentralization are positively linked to collective boundary control, which, in turn, had a positive effect on organizational performance. In addition, I found empirical support for the cross-level interaction hypothesis: Organizational ICT usage strengthened the impact of an individual's boundary control on his or her well-being. Implications for future theorizing and research are discussed.

Keywords: boundary management; HR systems; organizational design, multi-level modeling; organizational performance; individual well-being; ICT usage

5.1 Introduction

5.1.1 The Boundaries Between Work and Private Life Are Becoming Increasingly Blurred

Both human resources practitioners and organizational scholars are increasingly interested in how employees best navigate the lines between the work and the private sphere (Kossek et al., 2012; Kreiner, 2006). The increase in interest can be attributed to the fact that the boundaries between work and the private domain are becoming increasingly blurred for various reasons (Allen et al., 2014).

First, a rising number of employees work from home, which transforms “the home into both home and office” and thus poses challenges in terms of boundary management (Allen, Merlo, Lawrence, Slutsky, & Gray, 2021, p. 60). In particular, the COVID-19 pandemic has led to a sharp increase in remote work, and it is likely that these changes will also have long-term effects (Barrero et al., 2021). This trend also reflects the increase in the number of home-based businesses (Allen et al., 2014). Those businesses account for more than 50% of firms in the U.S. (Reuschke & Mason, 2022). Second, the handiness and reach of ICTs have improved significantly in recent years, allowing employees to stay connected to their company anywhere and at any time (Schlachter et al., 2018). Therefore, boundaries between work and private life are becoming increasingly blurred. For example, there has been an increase in the number of employees who check their e-mail outside of regular working hours, on vacation, and on weekends (Allen et al., 2014; for a detailed discussion, see section 1.1.3 “work-related usage of information and communication technologies”). And finally, family forms have changed significantly due to social changes. There is a rising share of dual career, single parent, and sandwiched families (i.e., middle-aged adults who care for both their children and their parents) both in the U.S. and Germany (Hochgürtel & Bettina, 2021; Pew Research Center, 2015a). These new

family forms require more flexible switching between work and private life (Kossek et al., 2012).

The above trends show that the lines between work and private life are becoming increasingly eroded. Likewise, current findings show that this is often accompanied by lower levels of well-being and higher levels of work-life stress (Kossek, 2016). Therefore, the question arises about how employees should best manage the boundaries between the work and the private domain and how companies can support this.

5.1.2 Effective Boundary Management Is Becoming More and More Important: Employees Need Boundary Control

Two perspectives characterized the initial research on this question. Whereas the *integrating perspective* states that merging the work and the private sphere is beneficial for individuals due to gains in flexibility, the *separating perspective* stresses that role blurring drains individuals' limited resources and thus argues for separating both spheres (Kossek, 2016). Conversely, recent research found that neither integration nor segregation is good per se, but that what matters is that employees can work according to their individual needs (Kossek et al., 2012; Kossek & Lautsch, 2007; Kreiner, 2006; Piszczek, 2017).

For instance, Kreiner's (2006) study showed, based on survey data from 325 employees, that employees' preference for segmentation interacts with the perceived work-home segmentation provided by their workplaces. Those workers for whom segmentation preferences more closely matched contextual resources showed lower levels of work-home conflict, less stress, and higher job satisfaction. Similarly, Kossek et al. (2012) found that those employees who can work according to their needs have more beneficial outcomes. They identified six boundary management profiles that differentially correlated with several outcomes. Interestingly, what mattered for the effectiveness of individual boundary management styles was not so much the actual behavior of the respondents

(whether they choose to integrate, segment, or alternate their style) or the centrality of their identity of work and family (i.e., “the relative value [they] placed on [their] different identities” [Kossek et al., 2012, p. 114]), but rather their individual *boundary control*. Boundary control determines the extent to which a person perceives “that (he/she) (has) control over how (he/she) manages the boundaries between work and family life” (Kossek & Lautsch, 2012, p. 161). Those profiles with a high degree of boundary control had more positive outcomes (lower levels of work-home conflict, lower turnover intentions, higher work-schedule fit, less psychological distress, and higher time adequacy) than those with a lower level of boundary control. The positive effect of boundary control was also demonstrated in Piszczek’s (2017) study, which found in a sample of 164 HR managers that boundary control is negatively linked to emotional exhaustion. Boundary control was assessed one month before emotional exhaustion in this study, making both common method bias (Podsakoff et al., 2003) less likely and strengthening the argument for a causal relationship. Matthews and his colleagues investigated *work flexibility-ability*, a similar construct to boundary control (Bulger, Matthews, & Hoffman, 2007; Matthews & Barnes-Farrell, 2010; Matthews, Barnes-Farrell, & Bulger, 2010). They define the construct as “an individual’s belief that he or she is able to change when and where domain activities take place” (Matthews & Barnes-Farrell, 2010, p. 331). Their research findings are consistent with the evidence on boundary control. For example, work flexibility-ability reduced work-to-private conflicts but was not statistically related to private-to-work conflicts. The latter finding suggests that the work does not suffer from the flexibility gained through boundary control. In addition, Bulger et al. (2007) found a positive relationship between work-flexibility and work-to-family enhancement (the construct describes favorable spillover impacts from the work to the private domain).

5.1.3 The Significance of Exploring Boundary Control at the Collective Level

In summary, it is evident that having control over the boundaries between work and private life is becoming an essential resource in a world of work characterized by increasingly blurred boundaries. But do these results translate to the collective level? And if so, what are the antecedents and performance implications of collective boundary control? Additionally, it remains unclear how the organizational context influence individual-level effects of boundary control.

In study 2 (see chapter 4), it was shown that collective boundary control acts as an essential lever for organizations to prevent employees from collective emotional exhaustion because of a climate of universal availability. However, to the best of the author's knowledge, no other study has examined boundary control at a collective level so far. Therefore, it stays unclear what the antecedents of collective boundary control are. Likewise, the direct effect of collective boundary control on organizational performance has not yet been investigated. Based on previous findings, individuals likely benefit from collective boundary control. However, on the collective level, it is questionable whether organizations also benefit, i.e., whether there are mutual gains or whether organizational performance decreases with increasing collective boundary control. Relatedly, it is striking that the moderating role of organizational context influencing the effects of individual boundary control has not yet been examined.

Given the limitations of existing research, I draw on the conservation of resources theory and design and test a multi-level model which explains the antecedents and performance implications of collective boundary control. Moreover, the model shows under which context the potential of individual boundary control is realized. I argue that both competence-enhancing HR systems and organizational design, in the form of decentralization, influence collective boundary control. Competence-enhancing HR systems are one aspect of High-Performance Work Systems (HPWS). HPWS are described as “systems of human resource (HR) practices designed to enhance employees’ skills, commitment and productivity” (Datta et al., 2005, p. 135). Competence-enhancing HR systems are

accordingly defined here as HR systems that promote employees' competencies. In line with previous research, it is argued that these systems help to increase collective boundary control in the organization. Furthermore, I propose that decentralization is positively related to collective boundary control. Decentralization is defined as "the degree to which decision-making discretion is moved downward and transferred to individuals at lower organizational levels, regardless of their formal authority" (Hüttermann, Berger, Reinwald, & Bruch, 2020, p. 6).

In organizations with a high degree of boundary control, there is a shared perception that employees have control over how they draw the lines between work and personal life. It is argued that boundary control is a crucial resource (Hobfoll, 2001) that increases performance at the organizational level and well-being at the individual level. According to the World Health Organization, health is "a state of complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity" (World Health Organization [WHO], 1948). This definition implies that well-being goes beyond the mere absence of disease (Rudolph et al., 2019). The proposed model also considers that contexts influence the creation and maintenance of resources (Hobfoll et al., 2018) by examining organizational ICT usage as a moderator. I suggest that especially those employees in companies with an elevated level of virtual communication benefit from individual boundary control.

Altogether, this paper investigates both the determinants that lead to collective boundary control and the subsequent outcomes of boundary control both at the organizational and the individual level. Moreover, the study examines in which organizational contexts the potential positive effects of boundary control are most likely to unfold (see Figure 14). In addition to the implications for HR practitioners regarding boundary management in the organization, the study adds to boundary management theory and empirical research in three ways.

First, this study is one of the first studies to examine boundary control as a construct that has effects at multiple levels. This approach is in line with Kossek

and Lautsch (2012), who developed a multi-level model of boundary management but have not tested it empirically yet. According to their model, *organizational work-family climate for customization*, conceptually similar to collective boundary control, influences individual outcomes related to boundary management (e.g., work-family conflict and boundary management style). The proposition that the collective perception of boundary control has effects on the individual level is evaluated in the present study. In addition, the theoretical considerations of Kossek and Lautsch (2012) are extended by examining the effects of boundary control at the organizational level as well. Thus, an essential contribution to both theory and practice is offered here by providing a multi-level perspective on boundary control that bridges both the individual and the organizational level.

Second, this study combines the literature on boundary management with research on ICT usage by examining organizational ICT usage as a moderator of the effects of boundary control. As mentioned at the outset, the blurring boundaries between work and private life and the use of ICTs are strongly interrelated. Therefore, this model considers reality by examining ICT use and boundary control in one integrative model.

Finally, this study examines not only the performance consequences of collective boundary control but also its key antecedents. Decentralized structures, i.e., flexible structures as well as competence-enhancing HR systems, are examined as essential levers for companies. The results contribute to the human resources literature on how effective HR systems should be designed as well as to the literature on organizational structure. By developing and testing a comprehensive multi-level model on the antecedents and outcomes of boundary control, I contribute to a better theoretical understanding of how organizations foster collective boundary control and what is in it for them.

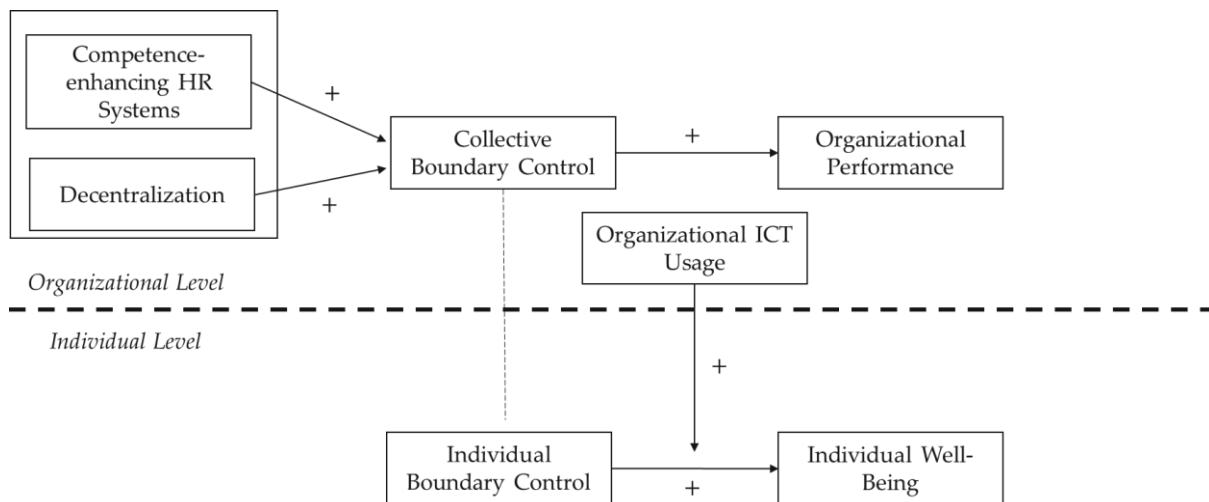


Figure 14. Study 3. The conceptual model of the study.

5.2 A Multi-Level Framework on the Antecedents and Effects of Boundary Control

To build the theoretical model, I integrate both boundary theory (Ashforth et al., 2000) and conservation of resources theory (Hobfoll et al., 2018). The combination of these theories can be used to derive antecedents and the performance consequences of collective boundary control and the effects of individual boundary control on an individual's well-being. In addition, these models allow hypotheses to be made about the organizational context that influences the individual effects of boundary control. In total, these frameworks indicate that both competence-enhancing HR systems and decentralization positively impact collective boundary control. Collective boundary control, in turn, acts as a critical resource, which should therefore affect organizational performance. Individual boundary control, in turn, should influence an employee's well-being. Moreover, the theories imply that the relationship between individual boundary control and an employee's well-being might be shaped by organizational ICT usage, a critical context factor in this regard. In the next section, I develop the theoretical rationale and explanation for my proposed model.

5.2.1 Competence-Enhancing HR Systems and Collective Boundary Control

Companies implement HR systems composed of a set of intertwined HR practices to influence their workforce for the better of the company (Boon, Hartog, & Lepak, 2019). “Those HR systems that enhance employee competencies, commitment, and productivity are often (described as) “high-performance work systems” (Posthuma et al., 2013, p. 1185). This work focuses on those HR systems that promote the competencies of employees. These are referred to in the following as competence-enhancing HR systems. Those systems focus on training and development, participation, and selecting the right employees. In general, research has shown that HPWS have a positive impact on outcomes at the organizational level of analysis like financial or operational performance (Posthuma et al., 2013). For example, P. M. Wright, Gardner, Moynihan, and Allen (2005) found in a sample of 45 business units that high performance work systems correlated positively with different organizational-level performance measures. Since “employees are simultaneously exposed to an interrelated set of HR practices rather than single practices one at a time ... the effects of HR practices are likely to depend on the other practices within the system” (Boon et al., 2019, p. 2499). The mechanism behind this effect is that HPWS “leverage human capital by acquiring, developing, and motivating the best talent” (Posthuma et al., 2013, p. 1184).

Posthuma et al.’s (2013) framework (p. 1188) shows that specific bundles of HR practices lead to products. The authors define products as “competencies that the organizational and HR architectures have created for the organization” (p. 1189). In the following, it is argued that competence-enhancing HR practices foster collective boundary control in an organization. Boundary control has been identified as a critical resource in the new working world characterized by blurred boundaries. In study 2, it was argued that it is not only an individual-level construct, but also an organizational-level construct as it spreads among members in a firm via crossover effects.

Organizations implementing competence-enhancing HR systems foster collective boundary control through targeted training. Boundary management scholars have noted that boundary control is not a personality variable but a psychological state that can be fostered through training measures (Kossek, 2016; Kossek & Lautsch, 2012). It is likely that collective boundary control will emerge in those organizations where employees have access to training in the areas of working time organization and effective time management. The core of effectively managing work time is to develop a conviction of control over one's own schedule and not be influenced only by external stimuli (Kossek & Lautsch, 2007).

Furthermore, collective boundary control should be formed, especially in those organizations that promote participation through HR practices. There is a change in values in today's working world. The younger generations, in particular, desire flexible working hours and more autonomy (Spreitzer et al., 2017). By using HR practices that allow employees to express themselves (e.g., through surveys), companies learn about these desires and adapt their job design accordingly (e.g., offer their employees more freedom to manage their time independently and integrate their work and private lives). Therefore, it can be assumed that collective boundary control will emerge in companies that establish competence-enhancing HR practices.

In addition, competency-enhancing HR practices are signals of the organization. For example, regular employee surveys and effective complaint management show that the organization cares about corporate members. These measures should strengthen employees' sense of control, which is also reflected in increased boundary control.

Lastly, HR practices aimed at increasing human capital in a firm should be positively related to collective boundary control. Especially those organizations that put a lot of effort into the selection process should attract employees with a high human capital (Takeuchi, Lepak, Wang, & Takeuchi, 2007). These employees need fewer instructions regarding structuring their working hours, as

they are used to deciding for themselves whether they want to separate work and private life during the working day.

In total, the above arguments imply that competence-enhancing HR systems are positively associated with collective boundary control. Hence, I propose the following hypothesis:

Hypothesis 1: Competence-enhancing HR systems are positively linked to collective boundary control.

5.2.2 Decentralization and Collective Boundary Control

Posthuma et al. (2013) stress that HR systems should not be considered in isolation but together with the organizational architecture. Instead, the authors state that “when organizational and HR architectures both contain principles, policies, practices, and products that have the same goal or purpose,” they are parallel and aligned (p. 1186). Concerning boundary control, Kossek (2016) recommends that organizations “implement (a) work design that gives employees greater boundary control.” Decentralization represents a key component of organizational structure (Pugh et al., 1968) which is likely to influence employees’ perceptions of boundary control.

Organizations differ in their degree of decentralization, i.e., “the extent to which decision-making authority is concentrated or shared” (Hüttermann et al., 2020, p. 6). While in some companies, even small decisions are passed on to a higher-ranking person (i.e., highly centralized organizations), in other companies, employees are able to make their own decisions (i.e., highly decentralized companies).

Delegating decision-making authority to lower-level employees promotes their autonomy (M. Aiken & Hage, 1966) since employees in these companies can make independent decisions and are “provided (with) more opportunities” (Hüttermann et al., 2020, p. 8). For instance, among the decisions employees make is whether to combine professional and private activities throughout the course of the day or keep both domains separate. Therefore, it is likely that in

precisely those companies where there is a high degree of decentralization, a shared perception that employees can control the “timing, frequency, and direction of mental, physical, and temporal transitions between the work and family domains” (Piszczeck, 2017, p. 592) emerges. This reasoning is in line with the conservation of resources theory which states that “environments and contexts create fertile or infertile ground for creation, maintenance, and limitation of resources” (Hobfoll et al., 2018, p. 107). According to this reading, organizations with flexible, decentralized structures foster collective boundary control.

In companies with highly centralized structures, on the other hand, shared perceptions of collective boundary control are less likely to emerge; this is because decision-making authority does not lie with employees at lower levels in these companies. Instead, they must refer even small matters to superiors who will make the decisions. Moreover, since employees in highly centralized companies are not allowed to make many decisions themselves, it can also be assumed that they are not allowed to decide for themselves how to manage the lines between work and private life. Accordingly, I suggest the following hypothesis:

Hypothesis 2: Firm decentralization is positively linked to collective boundary control.

5.2.3 The Effect of Collective Boundary Control on Organizational Performance

“Flexibility provides the conditions that facilitate or inhibit one’s ability to enact one’s preferred boundary management strategies.”
(Allen et al., 2014, p. 112)

In companies with a high degree of collective boundary control, employees can manage work according to their preferred boundary management strategy. I propose that collective boundary control has a positive effect on organizational performance. This effect is likely to be realized through two mechanisms.

First, collective boundary control is associated with feelings of autonomy (Kossek & Lautsch, 2012), as employees have the discretion to manage their boundaries between work and private life according to their needs. The resulting sense of autonomy and responsibility, in turn, fosters employees' motivational states like collective engagement. Engaged employees "are, as a whole, physically, cognitively, and emotionally invested in their work" (Barrick et al., 2015, p. 113). This motivational state spreads across the organization through contagion effects and creates an environment that energizes its members and inspires them to perform at higher levels (Barrick et al., 2015). Barrick et al. (2015) have shown that collective engagement "can be considered a unique, value-creating organizational capability" and translates into increased organizational performance (p. 199).

Second, in organizations with an elevated level of boundary control, employees can better balance their work and private life. Employees working in companies with a high degree of boundary control can develop strategies to balance work and personal life according to their needs which lowers work-life conflicts and fosters work-life balance instead. For instance, Kossek et al. (2012) found that boundary control is positively correlated with time adequacy, which "captures the extent to which an individual feels he or she has enough time to attend to self-care and family needs, such as spending time with children and family, preparing healthy meals, and keeping in shape" (p. 116). A recent review shows that employees who perceive a high degree of work-life balance also perform better at work (Sirgy & Lee, 2018).

In contrast, in companies with low levels of boundary control, work-life conflicts are more likely, which comes along with severe consequences for employees' performance (van Steenbergen & Ellemers, 2009). Employees who collectively perceive to have no control of their boundaries are forced into a specific boundary management strategy ("one fits all"-approach) (Piszczyk, 2017). For example, single mothers in companies where it is not allowed to integrate work and private life are sometimes faced with unsolvable problems when a family

emergency occurs. It quickly becomes apparent that this approach is improbable to reflect the reality not only of single mothers, but also many employees, which will cause elevated levels of work-life conflicts in these companies. Based on the arguments above, I suggest:

Hypothesis 3: Collective boundary control is positively related to organizational performance.

5.2.4 Boundary Control and Employee Health

Above, it was argued that collective boundary control benefits the organization. However, it is crucial not only to look at the macro-level of analysis but also to consider processes at the micro-level simultaneously (Berger, van de Brake, & Bruch, 2022). In the following, I propose that individual boundary control is positively related to an individual's well-being. Two mechanisms explain the hypothesized relationship.

To begin with, the conservation of resources theory states that stress, i.e., a negative mental health state (Montano et al., 2017), results when central resources are to be lost or threatened (Hobfoll, 2001). To avoid resource loss, people must build and invest resources (Hobfoll, 2001). There are numerous resources, but the most important ones are “central to survival or major goal attainment, and common across large groups of individuals” (Hobfoll et al., 2018, p. 113). One resource that matches the description and seems to be becoming more important in the digitalized modern working world is boundary control.

Boundary control allows employees to do their work according to their preferred boundary management style (Piszczek, 2017). Therefore, it can be concluded that a high degree of boundary control is required to avoid resource loss and thus emotional exhaustion. This argument is backed up by the study of Piszczek (2017), who found that boundary control is negatively associated with emotional exhaustion.

Boundary control is also believed to counteract negative health states for another reason. As stated above, boundary control is expected to lower work-family conflicts, as individual energy can be used exactly where it is needed. This argument is corroborated by the study of Kossek et al. (2012), who found that boundary control is positively related to work-schedule fit, “the extent to which one’s work arrangement meets the needs of various stakeholders such as a boss or a family member” (p. 116). As conflicts between work and private life negatively influence well-being (M. Zhang et al., 2012), individual boundary control contributes to well-being by reducing those conflicts.

Furthermore, it is argued that boundary control not only contributes to preventing a negative health state (i.e., emotional exhaustion) but also helps achieve a positive health state in the form of well-being. The conservation of resource’s *resource investment principle* states that “people must invest resources in order to protect against resource loss, recover from losses, and gain resources” (Hobfoll et al., 2018, p. 106). In other words, building up resources can lead to other resources. A person with a high degree of boundary control may work according to his or her individual segmentation preferences. I.e., he or she can mix work and private life during a day, or he or she can separate both spheres. This flexibility, in turn, should foster other resources. Firstly, boundary control is empirically linked to job control (Kossek et al., 2012). Job control has long been identified as an essential work characteristic (Hackman & Oldham, 1976) that fosters individual well-being (Holman & Axtell, 2016).

Secondly, boundary control allows people to employ different boundary tactics. Kreiner et al. (2009) identified four sets of boundary work tactics that helped the respective users to balance their professional and private demands and increased their perceived well-being. For instance, people with high boundary control might “bank time from home or work domain to be used later, block off segments of time, (and) decide when to do various aspects of work” (Kreiner et al., 2009, p. 716). Based on the arguments above, I propose the following hypothesis:

Hypothesis 4: Boundary control has a positive effect on individual health.

5.2.5 The Moderating Role of Organizational ICT Usage

As proposed above, individual boundary control has the potential to foster an individual's well-being. However, Hobfoll et al. (2018) suggest that contexts influence the creation and maintenance of resources. Therefore, it is likely that the relationship between individual boundary control and health varies across different organizational contexts. One context factor which seems genuinely relevant in this regard is organizational ICT usage, the average level of virtual communication in a company.

In contexts with an elevated level of organizational ICT usage, employees are able to reap the full potential of boundary control. As stated above, employees with high levels of boundary control can manage the work and the private sphere according to their individual needs (Kossek, 2016). Managing one's boundaries is far easier in companies where virtual communication tools like emails, messenger apps, and social networks are used. For example, a person with a high degree of boundary control in a company with a high degree of ICT use can send electronic messages outside regular business hours and assume that the other party will receive them. Previous research has shown that both boundary control (e.g., Kossek & Lautsch, 2012) and ICT use (e.g., Cavazotte et al., 2014; Mazmanian et al., 2013; Middleton & Cukier, 2006) increase individually perceived job control. Even if the other person does not answer directly (for example, because he or she is working at a different time), the work results can at least be communicated and thus be completed in one's mind. It is therefore likely that both effects reinforce each other. As argued above, job control is a vital resource and consequently related to individual well-being (Holman & Axtell, 2016).

Secondly, in companies with a high level of organizational ICT usage, people with a high degree of boundary control can make more efficient use of boundary tactics. Kreiner et al. (2009) stress the importance of technology in managing the

lines between work and private life. For example, respondents in the qualitative study appreciated that e-mail technology and telephone answering services create spaces where the individual does not have to be directly available. In the meantime, technological progress has massively expanded these possibilities. For example, it is now possible to be accessible only to specific groups of people (in the reading of boundary theory “allowing differential permeability” [Kreiner et al., 2009, p. 716]), to have automatic replies sent, and to have access to the company network from anywhere through virtual private network clients. Hence, in organizations with high levels of ICT use, it is easier for individuals with high degrees of boundary control to use boundary tactics, which positively impact individual well-being. In summary, the arguments above point to the below cross-level moderation hypothesis:

Hypothesis 5: Organizational ICT usage moderates the positive association between individual boundary control and individual well-being. The association is more pronounced when organizational boundary control is higher and less pronounced when organizational boundary control is lower.

5.3 Methods

5.3.1 Research Setting and Sample

Hypotheses were tested using a large-scale, multi-source data set including 8,273 employees, 148 HR representatives, and 144 top management team members from 154 German companies. The data collection was conducted in the years 2019 and 2020 as part of a broader project in partnership with a benchmarking agency.

The companies included in the analysis can be allocated to four different industries: service (50%), production (27%), trade (12%), and finance (11%). On average, each firm employed 275 employees ($SD = 352$) when the data were collected. Most of the companies surveyed (64%) can be classified as small to medium-sized enterprises (SMEs) with fewer than 250 employees (the relevance of

this study context has already been outlined in section 4.3.1). Of the participating employees, 60% were male, they were 40.08 years old on average ($SD = 11.04$), and the average company tenure was 8.60 years ($SD = 8.74$). On average, the within-organization response rate amounted to 75%. The top management teams consisted of an average of 2.87 people ($SD = 2.24$).

To limit the risk of common method bias (Podsakoff et al., 2003; Podsakoff et al., 2012), I drew on four different data sources (see Figure 15) within each organization: two different employee groups, as well as members of the top management team and, finally, the HR executive. Members of the top management team provided information on company performance. The HR executive answered questions about the competence-enhancing HR systems. In addition, HR executives indicated company size, industry affiliation, and staffing shortage, which were included as control variables in the analysis. Moreover, all employees of the participating firms were invited to the study via an email explaining the purpose of the research project and providing a link to a web-based survey. Data were gathered from the employees through a split-sample design (D. Rousseau, 1985): An algorithm randomly assigned participants into different groups that responded to different survey versions (survey versions 1-3). This procedure was chosen in order to reduce the number of questions per respondent and thus keep the response rate as high as possible. Employees of survey version 1 provided information on boundary control. Participants assigned to survey version 2 answered questions about a company's degree of decentralization. All survey versions (including those who answered survey version 3) contained questions on respondents' well-being and organizational ICT usage (i.e., the average level of virtual communication in a company). In addition, all survey versions collected respondents' gender, age, average hours worked per week, and tenure with the company. These variables, obtained from all participating employees, also served as control variables in the analyses.

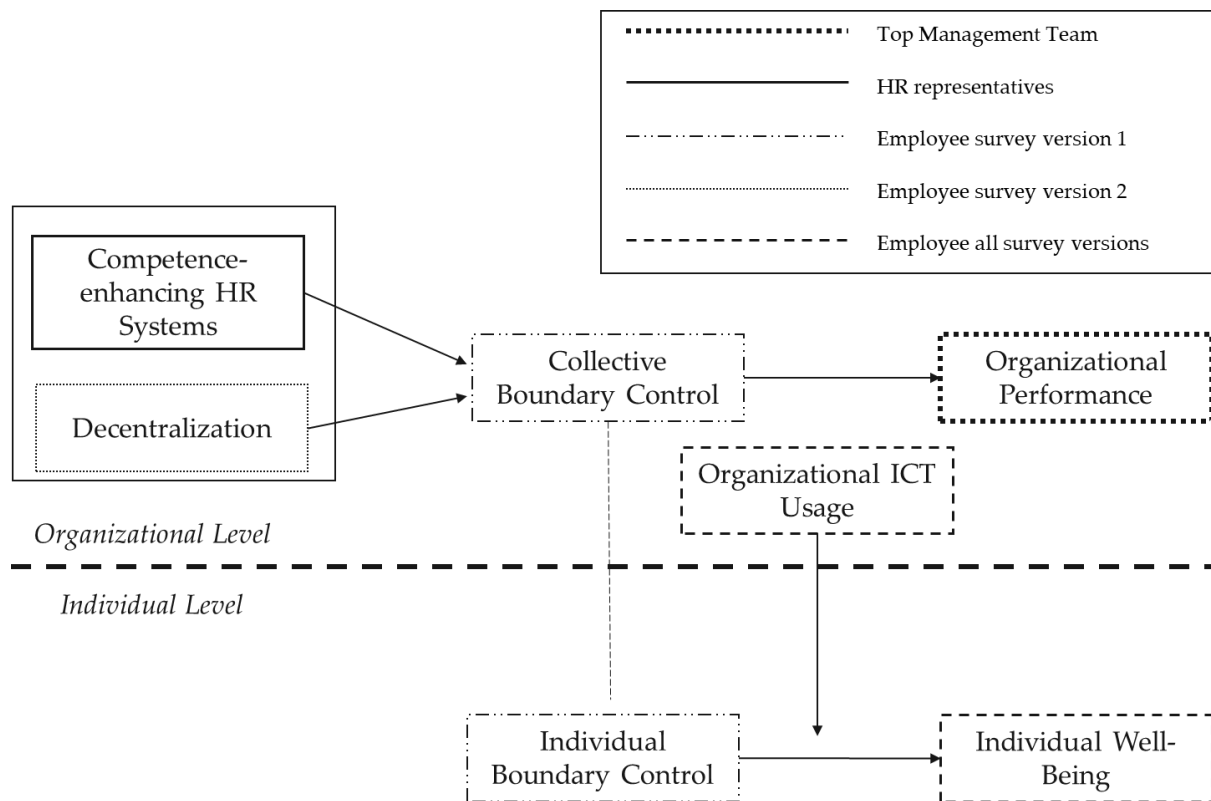


Figure 15. Study 3. Different data sources.

5.3.2 Measures

5.3.2.1 Individual-Level Measures

Boundary control. To capture boundary control, employees were requested in survey version 1 to rate three selected items on a 5-point Likert scale ranging from 1 “strongly disagree” to 5 “strongly agree” from the boundary control scale by Kossek et al. (2012). Sample items include “I control whether I am able to keep my work and personal life separate” and “I control whether I have clear boundaries between my work and personal life.” The internal consistency of the scale had a value of $\alpha = 0.77$.

Well-being. To assess individuals’ well-being, all employees were requested to rate the single item “How would you judge your overall state of health?” on a 5-point Likert scale ranging from 1 “bad/very bad” to 5 “very good/excellent.” The item has long been used in the past and has several advantages over longer

instruments in terms of respondent effort, simplicity of interpretation, and survey cost (Bowling, 2005). In addition, “it has been proposed that [...] health status [...], when used as [the] outcome variable, is more appropriately measured with a single global item since multi-domain measures confound the dimensionality of these concepts with the multiplicity of their causal sources” (Bowling, 2005, p. 343). Therefore, I relied on this instrument.

Control variables at the individual level. To lower the risk of omitted variable bias (T. E. Becker et al., 2016), several variables at the individual level were used as controls: First, I included individuals’ gender as a control variable (0 = Male; 1 = Female) as research has shown that women and men differ in terms of their boundary management and perceived work life-conflicts (Allen et al., 2014; L. E. Duxbury & Higgins, 1991). Second, I included employees’ age because of its close relationship with well-being (Steptoe, Deaton, & Stone, 2015). Third, I controlled for employees’ average working hours (weekly mean) as this variable is empirically linked to both boundary control (Piszczek, 2017) and employee well-being (Ng & Feldman, 2008a). Finally, I included employees’ tenure (years spent in a company) as a control variable because of its correlation with well-being (Bohlmann, Rudolph, & Zacher, 2021).

5.3.2.2 *Organizational-Level Measures*

Competence-enhancing HR systems. To measure competence-enhancing HR systems, HR executives were requested to rate five selected items on a scale from 0% (the HR practice does not affect any employee) to 100% (the HR practice affects all employees) from Datta et al.’s (2005) HR systems scale. More specifically, the five items chosen related to three HR practices: a) training and development, b) participation and autonomy, and c) selection of the right employees. Sample items include: “What percentage of employees have access to training in managing their work effectively and/or time management?”, “What percentage of employees are included in regularly conducted employee surveys?”

and “What percentage of employees are hired after active recruitment?”. The internal consistency of the scale had a value of $\alpha = 0.63$.

Decentralization. To assess the degree of organizational decentralization, I relied on three items from Hage and Aiken’s (1967) scale, which have been employed and validated by various studies before (e.g., Knight et al., 2018, Hüttermann et al., 2020). The items were rated by employees of survey 2 on a 7-point Likert scale ranging from 1 “do not agree at all” to 7 “completely agree.” Sample items include “Employees have to ask their superiors before they do almost anything” and “Most decisions made by employees here require the prior approval from their superior.” Consistent with previous research (e.g., Hüttermann et al., 2020), items were recoded so that larger values meant greater decentralization. This variable was assessed at the individual level and later aggregated to the organizational level using a composition model with referent-shift (Chan, 1998). To provide justification for the aggregation, I calculated intraclass correlation coefficients (ICC_1 and ICC_2 ; Bliese, 2000) and, furthermore, the $r_{wg(j)}$ index (James et al., 1984). Just as in the previous study, I relied on commonly accepted statistical thresholds in the research methods literature for all indices (Bliese, 2000; LeBreton & Senter, 2008; Smith-Crowe et al., 2014). The aggregation was justified by the results of the aggregation statistics ($ICC_1 = 0.12$, $ICC_2 = 0.87$, $median\ r_{wg(j)} = 0.63$). The internal consistency of the scale was $\alpha = 0.97$.

Collective boundary control ($ICC_1 = 0.06$, $ICC_2 = 0.78$, $median\ r_{wg(j)} = 0.81$). I aggregated employees’ individual boundary control to the organizational level in order to assess collective boundary control. The scale’s internal consistency was $\alpha = 0.73$.

Organizational ICT usage. I relied on an adapted version of Maynard et al.’s (2012) single-item measure to assess organizational ICT usage. Specifically, all employees were asked what percentage of their daily work communication relied on digital communication media such as email, video conferences, and messenger apps on a scale ranging from 0% to 100%. The aggregation was justified

by the results of the aggregation statistics ($ICC_1 = 0.21$, $ICC_2 = 0.97$, *median* $r_{wg} = 0.79$).

Organizational performance. The top management team members were requested to provide information on their organization's performance. In line with prior research (Cole, Bruch, & Vogel, 2012), they were asked to rate the following single item: "How do you rate the performance of your company in comparison to other companies in the same sector in terms of overall company performance?" The scale ranged from 1 = far below average to 7 = far above average. Again, the aggregation was justified by the results of the aggregation statistics ($ICC_1 = 0.32$, $ICC_2 = 0.48$, *median* $r_{wg(j)} = 0.89$).

Control variables at the organizational level. Control variables at the organizational level were also included. First, I considered company size (i.e., number of employees) due to its empirical link to the organizational design (Pugh et al., 1968) and organizational members' attitudes (Pierce & Gardner, 2004). Following prior studies (e.g., Berger & Bruch, 2021), I performed a log transformation, as this variable was skewed. Second, I accounted for companies' industry affiliation due to its implications for company performance (Datta et al., 2005) and employees' affect (Agarwal et al., 2002; Knight et al., 2018). In addition, the industry might impact the implementation of HR systems (Posthuma et al., 2013), as there are industries where human capital matter less than in others (e.g., industries that are less knowledge-intensive) and HR practices are therefore less important there (Subramony, 2009). Three industry dummy variables were entered (i.e., trade, service, and production) with the finance industry as the reference category. In addition, I controlled for possible staffing shortages because prior research has indicated that understaffing is empirically linked to employees' well-being (Weigl et al., 2019). To capture a company's level of understaffing, HR representatives were requested to rate the item "We are currently incapable of carrying out new projects due to a lack of personnel" on a Likert scale ranging from 1 (totally disagree) to 7 (totally agree). Finally, I include the data collection year as a control variable (0 = 2019; 1 = 2020). The survey period could affect both collective boundary control and organizational performance because

of the outbreak of the Corona pandemic in Germany in 2020, which resulted in drastic economic, social, and political changes (Antonakis, 2021).

5.3.3 Estimate of the Measurement Model

I ran a multi-level confirmatory factor analysis in Mplus 8.7 using maximum likelihood estimation to assess model fit and the validity of the constructs. Overall, the fit indices of the multi-level confirmatory factor analysis indicate a good model fit [$\chi^2 = 150.63$, $df = 72$ $p < 0.01$; $CFI = 0.99$; $TLI = 0.99$; $RMSEA = 0.007$; $SRMR_{within} = 0.015$; $SRMR_{between} = 0.065$]. As expected, all items loaded significantly to their respective latent variables.

5.3.4 Analytical Techniques

Employees in the data set at hand are nested within firms. Therefore, a so-called nested data structure is present, which is taken into account with multi-level modeling techniques (Nezlek, 2008). For this purpose, I ran a multi-level path analysis using maximum likelihood estimation in Mplus 8.7. Hypothesis 5 states that there is a cross-level interaction effect between individual boundary control (employee-level variable) and organizational ICT usage (firm-level variable) on individual well-being (again, employee-level variable). I followed the recommendations of Preacher, Zhang, and Zyphur (2016) to test this hypothesis. In detail, I regressed well-being on boundary control at the employee level. In doing so, I stored slope coefficients per company. Afterward, the effect of organizational ICT usage on those random slopes was modeled at the firm level.

To help interpret my results and in line with recommendations from the methodological literature (e.g., Aguinis, Gottfredson, & Culpepper, 2013), I grand-mean centered competence-enhancing HR systems, decentralization, collective boundary control, organizational ICT usage, and control variables at the organizational level of analysis (i.e., company size, industry affiliation, staffing shortage, and data collection year). Individual boundary control and controls at the

individual level of analysis (i.e., gender, age, weekly working hours, tenure) were firm-mean centered.

5.4 Results

5.4.1 Descriptive Statistics and Intercorrelations

Intercorrelations and descriptive statistics are shown for all variables in Table 13 (p. 136 - 137). As predicted, competence-enhancing HR systems are positively linked to collective boundary control ($r = 0.28, p < 0.01$). Similarly, decentralization and collective boundary control are related positively ($r = 0.54, p < 0.01$). Collective boundary control, subsequently, correlates positively with organizational performance ($r = 0.15, p < 0.01$). In addition, as proposed individual boundary control is positively linked to individual well-being ($r = 0.28, p < 0.01$).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Individual level</i>																	
1. Gender (female = 1)	--																
2. Age	-0.05**	--															
3. Working hours	-0.28**	0.04**	--														
4. Tenure	-0.03**	0.55**	-0.02**	--													
5. Boundary control	0.05**	-0.03	-0.10**	-0.05**	--												
6. Well-being	0.00	-0.12**	-0.05**	-0.14**	0.28**	--											
<i>Organizational level</i>																	
7. Company size	0.08**	0.01	0.01	0.08**	-0.01	-0.03**	--										
8. Industry (production)	-0.14**	0.04**	0.04**	0.09**	-0.08**	-0.03**	0.04**	--									
9. Industry (trade)	0.02*	-0.01	0.00	0.01	-0.03**	-0.03**	-0.03**	-0.25**	--								
10. Industry (service)	0.02*	-0.08**	0.01	-0.20**	0.07**	0.05**	-0.13**	-0.56**	-0.28**	--							
11. Staffing shortage	0.01	0.02	0.04**	-0.06**	-0.05**	-0.04**	0.04**	0.15**	-0.06**	0.15**	--						
12. Data collection year (2020 = 1)	-0.01	-0.01	-0.04**	-0.05**	0.03*	0.04**	-0.03**	-0.09**	-0.05**	0.03**	-0.03**	--					
13. CEHRS	0.11**	-0.04**	-0.06**	-0.03**	0.07**	0.03**	0.14**	-0.14**	-0.15**	-0.01	-0.28**	0.00	--				

Table 13. Study 3. Means, standard deviations, and correlations
(Please note that table is continued on the following page)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<i>Organizational level</i>																	
14. Decentralization	-0.04**	-0.04**	0.00	-0.10**	0.15**	0.11**	-0.20**	-0.30**	-0.03**	0.23**	-0.34**	0.03**	0.22**	--			
15. Collective boundary control	0.06**	-0.07**	-0.09**	-0.12**	0.28**	0.10**	-0.04**	-0.29**	-0.12**	0.25**	-0.17**	0.10**	0.28**	0.54**	--		
16. Organizational performance	0.10**	0.02*	-0.01	-0.01	0.04**	0.03**	-0.03**	-0.05**	-0.08**	-0.01	-0.03**	-0.02**	0.13**	0.05**	0.15**	--	
<i>Cross-level interaction</i>																	
17. Organizational ICT usage x individual boundary control	0.02	0.02	-0.02*	-0.06**	0.57**	0.16**	0.04**	-0.28**	-0.02*	0.18**	0.01	0.43**	0.05**	0.16**	0.28**	0.09**	--
Mean	0.40	40.08	40.03	8.60	4.09	3.98	2.60	0.33	0.11	0.38	3.42	0.29	77.03	4.59	4.08	5.91	200.00
SD	0.49	11.82	8.68	8.74	0.80	0.86	0.42	0.47	0.32	0.49	1.56	0.45	21.62	0.61	0.23	0.76	72.59

Note. N = 8,273 - 25,285 employees in 139 - 154 companies. To obtain correlations between variables at the individual level of analysis and variables at the organizational level, I assigned aggregated scores to individuals. * p < 0.05 ** p < 0.01. CEHRS stands for competence-enhancing HR systems.

Table 13 (continued). Study 3. Means, standard deviations, and correlations

5.4.2 Hypothesis Testing

5.4.2.1 Organizational-Level Analyses

The results of the hypothesis tests are reported in the following. Table 14 shows the results of the multi-level path analysis. The findings support Hypotheses 1 and 2, which is shown by a positive and statistically significant association between competence-enhancing HR systems and collective boundary control ($B = 0.003$, $SE = 0.001$, $p < 0.01$; Model 1), and between decentralization and collective boundary control ($B = 0.145$, $SE = 0.025$, $p < 0.01$; Model 1). Model 1 explains 32.31% of the variance in collective boundary control. Furthermore, Table 14 (Model 2) shows that collective boundary control has a positive and statistically significant effect on organizational performance ($B = 0.714$, $SE = 0.344$, $p < 0.05$). 6.51% of the variance in organizational performance is explained by Model 2. Thus, Hypothesis 3 is supported by the data.

5.4.2.2 Individual- and Cross-Level Analyses

Hypothesis 4 states that individual boundary control has a positive effect on individual well-being. In support of Hypothesis 4, Table 14 (Model 3) shows that the relationship between boundary control and well-being is positive and significant ($B = 0.268$, $SE = 0.015$, $p < 0.01$). 10.70% of the variance in well-being is explained by Model 3. Hypothesis 5 predicts that the association between boundary control and well-being is moderated by organizational ICT usage, such that the relationship at the individual level strengthens as organizational ICT usage increases. As can be seen in Table 14 (Model 3), the cross-level interaction term is positive and statistically significant ($B = 0.002$, $SE = 0.001$, $p < 0.05$). In addition, I conducted a simple slopes analysis and plotted the interaction effect at low ($-1\ SD$; $B = 0.23$, $SE = 0.02$, $p < 0.01$), average ($B = 0.27$, $SE = 0.02$, $p < 0.01$), and high ($+1\ SD$; $B = 0.30$, $SE = 0.02$, $p < 0.01$) values of organizational ICT usage (see Figure 16). A simple slope test shows that the positive effect of individual boundary control on well-being becomes more pronounced under high

levels of organizational ICT usage. 12.5% of the variance in the random slope was explained by the moderating variable organizational ICT usage. Thus, Hypothesis 5 is supported by the data.

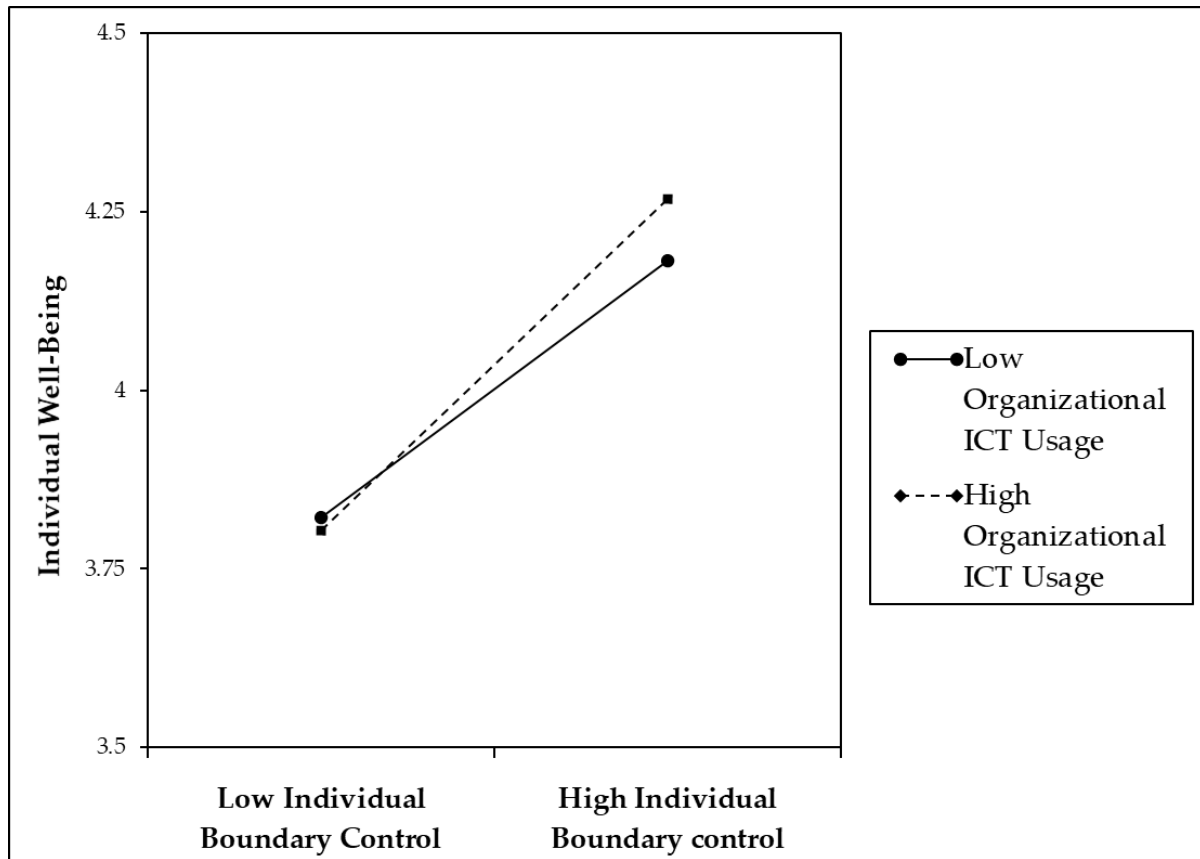


Figure 16. Study 3. Cross-level interaction of boundary control and organizational ICT use on individual well-being.

Level and variable	Collective Boundary Control			Organizational Performance			Employee Well-Being		
	Main effects (Model 1)			Main effects (Model 2)			Cross-level interaction (Model 3)		
	B	S.E.	P-Value	B	S.E.	P-Value	B	S.E.	P-Value
<i>Individual level (L₁)</i>									
Gender (female = 1)							-0.032	0.022	
Age							-0.002	0.001	†
Working hours							-0.002	0.001	*
Tenure							-0.010	0.002	**
Boundary control							0.268	0.015	**
<i>Organizational level (L₂)</i>									
Company size	-0.055	0.035		-0.085	0.142				
Industry (production)	-0.014	0.074		-0.242	0.255				
Industry (trade)	0.070	0.084		-0.299	0.293				
Industry (service)	0.074	0.071		-0.336	0.243				
Staffing shortage	0.003	0.012		-0.039	0.047				
Data collection year (2020 = 1)	0.036	0.038		-0.159	0.152				
CEHRS	0.003	0.001	**	-0.001	0.003				
Decentralization	0.145	0.025	**	-0.076	0.116				
Collective boundary control				0.714	0.344	*			
<i>Cross-level interaction</i>									
Organizational ICT usage x individual boundary control							0.002	0.001	*
<i>R²</i>	32.31%			6.51%			10.70%		

Note. The coefficients reported are unstandardized. N = 8,273 employees in 154 companies; † p < 0.1; * p < 0.05; ** p < 0.01.

Table 14. Study 3. Results of multi-level path analysis.

5.5 Discussion

Given the increasingly blurred boundaries between work and personal life, this study focused on collective boundary control. This new and timely construct represents a significant resource for organizations and employees in the new world of work. At first, the antecedents of collective boundary control were examined in depth. In a second step, the consequences of both collective and individual boundary control were considered. Moreover, the study shed light on the organizational context in which the individual-level effects occur. Findings from my multi-level and multi-source study of 8,273 individuals in 154 companies reveal that competence-enhancing HR systems and decentralized structures foster collective boundary control, which, in turn, is positively associated with organizational performance. Individual boundary control, on the other hand, is positively related to well-being. Moreover, the data supported the cross-level hypothesis that organizational ICT usage strengthens the effect of an individual's boundary control on his or her well-being.

5.5.1 Theoretical Implications

Whereas previous studies of boundary management have primarily focused on either the individual or the organizational perspective (Allen et al., 2014), this study empirically explores the multi-level nature of boundary management. As a result, this study contributes to previous research in several ways.

Firstly, the study shows, in accordance with prior theoretical considerations (Kossek & Lautsch, 2012), that boundary control is a relevant construct at the organizational level of analysis by showing that collective boundary control has an effect on organizational performance controlling for several factors. The fact that collective boundary control is positively associated with organizational performance shows that the construct is a valuable resource for organizations.

Secondly, this study found that boundary control at the individual level is more critical for the well-being of those employees who work in organizations with

high levels of virtual communication. This finding is an essential contribution to previous research on boundary control which has neglected the impact of organizational context. By showing that organizational ICT usage moderates the effects of boundary control, this study underscores Hobfoll et al.'s (2018) argument that contexts influence the creation and maintenance of resources. Similarly, the multi-level model better reflects organizational reality.

Finally, this study identifies competence-enhancing HR systems and decentralization as two relevant antecedents of collective boundary control. Thus, on the one hand, this research contributes to the HR literature (Posthuma et al., 2013) by showing which HR practices should be combined to foster collective boundary control. On the other hand, this research contributes to the literature on organizational structure (Csaszar, 2012). Scholars have emphasized that although flexible organizational structures are on the rise, research does not have clear answers about what this means for organizational performance and individual employees (Hüttermann et al., 2020). By showing that decentralization is positively related to collective boundary control, which, in turn, promotes organizational performance, this study makes an essential contribution to this stream of literature. Moreover, this study highlights the vital role of employees in the link between structure and organizational performance. Thus, this study differs from previous research on organizational design, which has excluded people in organizations and purely focused on the macro-level (Hüttermann et al., 2020).

5.5.2 Managerial Implications

From this research, several implications for managerial practice can be derived. First of all, the results underscore previous research findings that demonstrated that boundary control has beneficial effects on a person's well-being. Employees "with high (levels of) boundary control can create the boundary arrangement that best suits them" (Allen et al., 2014, p. 114). As a result, they have a valuable resource that helps them gain more resources on the one hand and protects them from losing resources on the other (Hobfoll et al., 2018). As a result, they

have a higher sense of well-being. In addition, I found that organizations in which the workforce perceives an elevated level of boundary control outperform organizations with a low level of boundary control. Accordingly, my findings suggest that companies should foster boundary control. I.e., they should consider a new form of flexibility besides flexibility regarding the location where work is performed, temporal flexibility, and flexibility with regards to the employment relationship (Spreitzer et al., 2017). They should also take into account *psychological flexibility* (Kossek & Lautsch, 2007) in the form of boundary control. With this new form of flexibility, employees can design their own boundary strategy that fits their needs.

Second, this study examined two important organizational levers which help to reap the benefits of collective boundary control. Organizations that want to heighten collective boundary control should implement competence-enhancing HR systems together with flexible organizational structures. Based on the literature on HR systems, it can be expected that the greatest effect can be achieved when both structures are aligned and focused on the same strategic goal (Posthuma et al., 2013).

Finally, this study shows in which contexts the potential of boundary control for individual well-being is most likely to be realized. In particular, those organizations with high levels of virtual communication should encourage their employees' individual boundary control.

5.5.3 Limitations and Directions for Future Research

Although this research has notable methodological strengths like a multi-source, multi-level data set comprising 8,273 employees, 148 HR representatives, and 144 top management teams from 154 firms from several industries, it is not without limitations. These limitations are mentioned below. Likewise, avenues for future research are identified.

First, the data analyzed is cross-sectional, so I cannot warrant strong causal claims. Nevertheless, it should be mentioned that correlational designs can yield

supportive evidence on relationships between variables and potentially eliminate alternative explanations (Spector, 2019). In addition, the model was developed on the basis of sound theoretical theory, which lowers the risk of reverse causality, although it does not eliminate it. I recommend that scholars continue research in this fruitful direction and study collective boundary control with more rigorous designs.

Second, like most studies on boundary dynamics conducted previously (Allen et al., 2014), this study was also undertaken in a Western context (in this case, Germany). Therefore, caution should be taken when applying the results to other cultures, as boundary management is influenced by the cultural context (Ashforth et al., 2000). Thus, I echo the call of Allen et al. (2014) to conduct more cross-cultural and cross-national research in this area. For instance, collective boundary control might have different effects on company performance in collectivistic cultures (as opposed to individualistic cultures).

5.5.4 Conclusion

This study shows that boundary control is a critical resource in the new world of work not only for individual well-being but also for organizational performance. Those individuals who work in organizations with a high average level of virtual communication especially benefit from boundary control. Organizations need to implement competence-enhancing HR systems and flexible work structures to foster collective boundary control. I hope that these findings help organizations to implement an effective culture of boundary management that fosters individual well-being and organizational performance.

6 Promoting Health and Performance in the Era of Constant Connectivity

The concluding chapter synthesizes and discusses the key findings of this dissertation in a condensed manner (section 6.1). This will also answer the research questions derived from the literature review based on the findings of the three studies (sections 6.1.1 to 6.1.7). Furthermore, the theoretical contributions are presented (section 6.2). Afterward, practice recommendations follow (section 6.3). Subsequently, the limitations of the work are identified, and an agenda for future research is set (section 6.4). A conclusion of the research project and last remarks are given in section 6.5.

6.1 Summary of the Research Results

The way work is conducted changed remarkably over the past decades and is still evolving constantly around the world (Barley et al., 2017). In the new world of work, work is becoming more flexible in several ways (Kossek & Lautsch, 2018). Many people are no longer bound to fixed workplaces and working hours. Instead, they can work at any time and in any place. Their relationship with their employer is more individualized, and they are granted more autonomy (Schuler, 2018). Beyond that, there is an increasing proportion of people who work independently of organizations as "independent workers" (Petriglieri et al., 2019). The new flexibility is made possible, among other factors, by ICTs such as smartphones, tablets, e-mail, and business communication platforms, which are being used in increasing numbers and can be considered an essential cornerstone of the new flexibility (Spreitzer et al., 2017). These changes will, in all likelihood, proceed in the future as the Corona pandemic and associated changes in collaboration act as reinforcers of these trends (Bruch, 2022).

While the benefits of these unprecedented changes are apparent, the new flexibility also brings challenges for companies and their workforce. For instance, a

significant proportion of workers, especially those with leadership roles, communicate electronically after hours (see section 1.1.3). This development triggers a debate in corporate practice about how the boundaries between work and private life should be managed and how to deal with ICTs outside regular business hours (Kossek, 2016). The question arises as to *how the potential of the new flexibility through ICTs can be used to promote both performance and well-being*.

The research literature reflects this debate in the business world. Work-related ICT use outside regular business hours has been intensively studied, as has the blurring of the boundaries between work and private life in this context. However, an in-depth literature review (section 2.2) revealed that the available studies on the effects of work-related ICT use outside regular business hours do not allow any clear conclusions to be drawn as there is both a “bright” and a “dark” side. Furthermore, there are no empirical studies on the use of ICTs by executives and what consequences this use has for the well-being of employees. In addition, it is also unclear how companies support their employees in achieving psychological flexibility in the form of boundary control and what effects this has. Against this background, this dissertation contributes with three empirical studies to several research gaps by examining ICT usage both during and after regular working hours and by focusing on boundary control, a central resource in the new world of work. From these findings, important implications for managerial practice can be derived.

6.1.1 The Influence of Executives' ICT Usage After Hours on Their Job Performance

In study 1, data from 4,257 executives from 94 companies were analyzed to examine how executives' ICT use affects their job performance (research question 1). The study finds a positive indirect relationship between an executive's after-hours work-related smartphone use and his or her job performance. The association is mediation by work flexibility regarding time and place. I.e., executives

who use their smartphones intensively outside regular business hours gain personal flexibility, which translates into higher levels of job performance.

6.1.2 Boundary Conditions at the Individual Level Influencing the Effects of Executives' ICT Usage After Hours

Study 1 does not only analyze *how* (i.e., through which mechanism) leaders' after-hours work-related smartphone use affects their job performance but also *when*. Executives' polychronic orientation, their perceived level of job pressure, and the degree of formalization in the respective organization were examined as moderators. The data show that the positive indirect association between an executive's after-hours work-related smartphone use and his or her job performance strengthens as his or her polychronic orientation and the degree of formalization in the respective organization increases. In contrast, the indirect relationship is weakened when job pressure increases. In summary, the study shows the conditions under which executives can exploit the potential of ICT after hours (research question 2). Polychronically-oriented executives and those in formalized organizations benefit from ICT usage after hours. However, those executives who already perceive elevated levels of job pressure are less likely to benefit from the work-related use of their smartphones after hours.

6.1.3 Executives' ICT Usage and Employees' Health

Study 2 examines the influence of smartphone use after hours by executives on the well-being of employees and thus provides an answer to research question 3, which asked how after-hours work-related ICT use by executives affects employees' health. The analysis of large-scale survey data from 11,703 employees and 99 HR representatives collected in 99 German companies from multiple industries shows a positive indirect effect of leaders' after-hours work-related smartphone use on collective emotional exhaustion. This result indicates that employees are more emotionally exhausted in those organizations where executives also communicate heavily via ICTs after hours.

6.1.4 The Impact of Executives' ICT Usage on the Organizational States and Organizational Outcomes

Furthermore, study 2 shows that the positive indirect relationship between leaders' after-hours work-related smartphone use and employees' collective well-being is mediated via the new construct climate of universal availability. In other words, executives who intensively use their smartphones for work-related purposes after hours foster the shared belief that the company expects availability for work-related matters even after hours. Such a climate, in turn, drains employees' resources, as evidenced by increased levels of collective emotional exhaustion. The study, therefore, provides an answer to research question 4, which asked what impact leaders' ICT usage has on organizational norms and outcomes.

6.1.5 Boundary Conditions at the Collective Level Influencing the Effects of Executives' ICT Usage After Hours

Study 2 also examines collective boundary control, an important lever that helps companies deal with the challenges of the modern communication age. The data show that employees' collective boundary control moderates the indirect relationship between leaders' after-hours work-related smartphone use and collective emotional exhaustion, as mediated by the climate of universal availability. This indirect relationship is positive and weakens as collective boundary control increases. The study thus shows an interaction between the communication behavior of executives and the competencies of employees, which determines the impact on the organization. Hence, the findings provide an answer to research question 5, which asked which boundary conditions influence the effects of leaders' work-related ICT usage after hours on employees' well-being.

6.1.6 Antecedents and Effects of Boundary Control at Multiple Levels

Study 3 further focuses on the antecedents and performance implications of collective boundary control. Moreover, the model indicates under which context

the potential of individual boundary control is realized. Thus, this study addressed research question 6. Large-scale survey data from 8,273 employees, 148 HR representatives, and 144 top management teams from 154 German firms from several industries reveal that competence-enhancing HR systems and decentralization are antecedents of collective boundary control. Collective boundary control, on the other hand, had a positive effect on organizational performance. Individual boundary control, in turn, had a positive effect on an individual's well-being. In particular, employees in companies with a high degree of ICT use benefit from individual boundary control.

6.1.7 An Integrative Consideration of the Study Results

It was shown that executives can benefit individually from ICT usage after hours. Through modern communication technology, their work flexibility increases, which in turn heightens their job performance (study 1). Especially polychronic executives in highly formalized organizations who perceive moderate levels of job pressure can make use of the potential of ICTs. While individual executives benefit from after-hours ICT use, this behavior poses dangers to the workforce as leaders influence organizational norms and climates (D. V. Day et al., 2014). Through leaders' after-hours ICT usage, the shared belief that the company expects availability for work-related matters even after hours can emerge. Employees do not do well in such a climate of universal availability. Instead, their resources are depleted, which manifests itself in increasing collective emotional exhaustion.

In organizations with a high level of collective boundary control, the detrimental effect of leaders' after-hours work-related ICT use on employee well-being is buffered (study 2). The emergence of a climate of universal availability is less likely in these organizations. Moreover, Study 3 shows that collective boundary control is not only an essential lever in preventing employees from burning out in the face of availability norms but that companies with elevated levels of collective boundary control outperform companies with low levels of

collective boundary control. In addition, a significant positive association between individual boundary control and well-being was found. The study further highlights that the individual effect of boundary control on well-being is even more pronounced in those organizations with a high average level of virtual communication. Organizations can foster collective boundary control through competence-enhancing HR systems and decentralized structures.

6.2 Theoretical Contributions

This dissertation contributes in several ways to existing research and theory in the field of organizational behavior. While specific contributions have already been highlighted in the respective studies (cf. sections 3.5.1, 4.5.1, and 5.5.1), the main contributions are presented comprehensively in the following ways. This thesis makes contributions to a) the literature on information- and communication technologies, b) research on leadership, and c) literature on boundary management and well-being in organizations.

6.2.1 Literature on Information and Communication Technologies

6.2.1.1 *Executives' ICT Usage After Hours Matters*

By examining the impact of work-related ICT use by executives outside regular business hours, the dissertation addresses a timely research gap in the continuously growing literature on information- and communication technologies.

Until now, little research has been conducted on the effects of ICT use by executives (B. Wang et al., 2020). It was previously unclear what impact the work-related use of ICTs after hours by executives has on themselves as well as on their subordinates. This gap in the research literature was problematic for several reasons: First, leadership, in general, has a significant impact on employee well-being (Montano et al., 2017). Leaders are vital role models who signal which behaviors are desired and encouraged. Additionally, their behaviors directly shape followers' emotional, motivational and cognitive states (Fischer et

al., 2017). On a collective level, leadership behaviors influence organizational climates (D. V. Day et al., 2014), which in turn are related to collective health. Therefore, the fact that there have been no studies to date on the relationship between after-hours ICT use by executives and employee health represents a relevant research gap. Second, individuals with leadership roles are even more likely to use ICTs outside of regular working hours for work-related purposes than individuals without leadership roles (Teevan et al., 2021). Relatedly, Boswell and Olson-Buchanan (2007) show that the impact of work-related ICT use after regular business hours is even more pronounced for users with leadership roles than for users without leadership roles. Accordingly, it seemed even more important to analyze what influence ICT use outside regular business hours has on the users themselves.

The findings underscore the relevance of after-hours work-related ICT usage by executives. Moreover, the studies demonstrate that this behavior has consequences for the respective leaders themselves and those they lead. While executives themselves benefit from increased work performance (study 1), there is a risk that their employees' resources will be drained, and collective emotional exhaustion will result (study 2).

In addition, both studies follow the call of Schlachter et al. (2018) to investigate mechanisms that mediate the effects of work-related ICT usage after hours. Results indicate that leaders who extensively use their smartphones for work-related matters after hours experience increased work flexibility that helps them improve their job performance (study 1). Perceived work flexibility reflects the nature of work. Thus, this thesis supports the argument of B. Wang et al. (2020) that ICT use has "an effect on work per se" (p. 695). On the other hand, leaders' ICT usage may foster a climate of universal availability that leads to collective emotional exhaustion (study 2).

6.2.1.2 *Towards a Conditional Process Perspective on the Effects of Leaders' ICT Usage After Hours*

Research that examined the impact of after-hours work-related ICT usage has produced mixed results, which indicates that the effects depend on boundary conditions. Hence, this work followed recent recommendations to examine moderating variables (Schlachter et al., 2018; B. Wang et al., 2020) on which the effects of work-related ICT usage after hours depend. Studies 1 and 2 found support for several moderating variables that influence the impact of leaders' ICT usage after hours both on the leader themselves and on organizations. Such a contingency perspective is vital because “answering such questions of *how* and *when* results in a deeper understanding of the phenomenon or process under investigation, and gives insights into how that understanding can be applied” (Hayes, 2018, p. viii).

This dissertation, therefore, offers guidance on the conditions under which the potentials of ICT come to the fore. Executives' polychronic orientation, their perceived level of job pressure, and the degree of formalization in the respective organization were identified as relevant boundary conditions on the individual level (study 1). On the organizational level, collective boundary control was identified as a moderator shaping the effects of leaders' ICT usage on employee outcomes. This dissertation takes an even more fine-grained perspective by conducting two moderated mediation analyses. These analyses “uncover and describe the contingencies of mechanisms—the *when* of the *how*” (Hayes, 2018, p. viii). Accordingly, based on the study results, it can be predicted that the named moderators will affect the *mediated relationships* between after-hours work-related ICT usage by leaders and its outcomes.

6.2.1.3 *Leaders' ICT Usage at the Organizational Level of Analysis and its Effect on Organizational Norms*

To the best of the author's knowledge, there are no studies on leaders' ICT usage at the organizational level of analysis. An organizational perspective is all the

more critical in this context, however, because executives impact organizational states, such as organizational norms and climates, and outcomes (D. V. Day et al., 2014). Relatedly, there are also no quantitative findings on the question of how norms regarding ICT arise at the organizational level.

This thesis examines, among other things, the influence that leaders have on such organizational climates related to availability norms, testing researchers' assumptions that leaders play a significant role in creating such climates (W. J. Becker et al., 2021; Belkin et al., 2020). As shown in study 2, leaders' after-hours work-related ICT usage contributes to the creation of a climate of universal availability, which in turn has a detrimental effect on the collective well-being of employees.

At this place, another contribution of this research should be pointed out. Although organizational climates and norms are inherent organizational-level constructs, previous research has analyzed them only at the individual level of analysis (W. J. Becker et al., 2021; Belkin et al., 2020; Fenner & Renn, 2010; Y. Park et al., 2011; Piszczek, 2017; Richardson & Benbunan-Fich, 2011). Therefore, this work contributes to a better understanding by examining the climate of universal availability at the organizational level. Apart from the fact that it is conceptually more appropriate to study an organizational climate at the organizational level (Schneider et al., 2013), there is one more methodological advantage: It is thus possible to statistically assess the degree of agreement between the individual organizational members. Aggregation statistics in study 2 show that there exists a strong shared perception among organizational members regarding the climate of universal availability ($ICC_1 = 0.12$, $ICC_2 = 0.82$, *median* $r_{wg(j)} = 0.90$). This finding underscores the importance of analyzing the construct at the organizational level of analysis.

6.2.2 Research on Leadership

Researchers have already pointed out the conceptual and methodological problems that come along with broad established leadership styles (Behrendt et al.,

2017; van Knippenberg & Sitkin, 2013): For example, it is often unclear why specific dimensions are and are not part of a leadership style. Or how these dimensions interact to form the overall construct. Also, the influences of the individual dimensions cannot be traced when analyzing the effects of the overall construct. To meet these challenges, van Knippenberg and Sitkin (2013) have called in a highly influential article to study “more clearly defined and empirically distinct aspects of leadership” (p.2).

Leaders’ ICT usage is such an essential aspect of leadership. The managerial role comes with high workloads, fragmented tasks that are difficult to plan, and leadership responsibilities (Bruch & Ghoshal, 2004). To manage these demands, executives have to frequently communicate with different stakeholders and often do so after hours (see section 1.1.3). This thesis indicates that this leadership behavior has measurable effects that are relevant not only to the leaders themselves but also to their followers.

6.2.3 Literature on Boundary Management and Well-Being in Organizations

The usage of ICTs after hours for work-related purposes is often studied through the lens of boundary theory (Allen et al., 2014; Ashforth et al., 2000). Recent developments in this stream of literature indicate that no specific boundary management style (for instance, integration or separation) is beneficial or detrimental per se, but that what matters is that individuals are allowed to manage the boundaries between work and private life according to their needs (Kossek & Lautsch, 2007, 2012; Kreiner, 2006; Piszczek, 2017). People with high levels of boundary control are able to do so, which is beneficial to their well-being (e.g., Hesse & Bruch, 2021; Kossek & Lautsch, 2012; Piszczek, 2017).

To date, boundary control has been studied primarily at the individual level, although theoretical work suggests a multi-level phenomenon (Kossek & Lautsch, 2012). As a result, it has been unclear what the effects of collective boundary control are and what the antecedents of collective boundary control are. Similarly, it has not yet been investigated how the organizational context

influences the individual effects of boundary control. Nevertheless, these questions are worth exploring, as it is theoretically not straightforward that collective boundary control results in positive consequences even at the collective level. Similarly, it is questionable whether boundary control plays a more pivotal role in virtualized contexts where ICTs are heavily used than in contexts where ICTs are less heavily used.

This dissertation shows that boundary control is a relevant construct at the organizational level of analysis (studies 2 and 3). Collective boundary control has a positive effect on organizational performance and has a buffering effect on the positive relationship between leaders' work-related smartphone use after normal business hours and the climate of universal availability.

Moreover, this thesis extended previous individual-level studies of boundary control by examining the critical role of organizational context. As a result, it turned out that boundary control at the individual level is even more critical for the well-being of those employees working in organizations with elevated levels of organizational ICT usage. This finding is important given the fact that previous research on boundary control has neglected the impact of organizational context.

Finally, this thesis showed that competence-enhancing HR systems and decentralization are determinants of collective boundary control. Hence, this research contributes to the HR literature (Posthuma et al., 2013) and the literature on organizational structure (Csaszar, 2012).

6.3 Implications for Management Practice

The empirical results of this dissertation show both the opportunities and the risks of the era of constant connectivity. Furthermore, the findings reveal how companies, managers, and employees successfully navigate this challenging period. Therefore, this section provides evidence-based recommendations that emerge from the dissertation. To begin with, two contrasting future perspectives of the era of constant connectivity are presented. The positive scenario shows a connected, digitized new world of work in which work is flexible, healthy, and high performing. The negative scenario, by contrast, shows a working world in which employees' resources are depleted due to permanent availability and in which ICTs are perceived as “invisible leashes” (Belkin et al., 2020). Subsequently, several suggestions for realizing the favorable scenario follow.

6.3.1 A Flexible and Connected New Working World versus A Working World of Constant Universal Availability and Exhaustion

Dealing properly with the latest ICTs and effectively managing the boundaries between work and private life represents a decisive competitive advantage in the new world of work. If the companies are successful in this endeavor, a positive scenario of the networked and the digitized new working world can be realized. In this scenario, information is exchanged quickly and without major hurdles via mobile ICTs, which fundamentally changes the nature of work (B. Wang et al., 2020). Employees and executives can work from any location and at any time, which offers them work flexibility. This flexibility is utilized, perceived as a resource, and translates into increased work outputs.

In the favorable scenario, the workforce is given not only local and temporal flexibility through flexible work arrangements and ICTs, but also psychological flexibility through boundary control. Employees can divide their work according to their needs and draw clear boundaries between work and private life. In concrete terms, this means that *separators* can keep their professional and private

life separate. Integrators, however, have the freedom to mix work and private life. As a result, they achieve an effective work-life balance through boundary control, promoting personal well-being. At the same time, companies benefit from boundary control in terms of increased company performance.

In contrast, employees in the negative scenario must be constantly available. Their ICTs act as electronic leashes (Belkin et al., 2020) that tie them to the company and diminish their flexibility. Due to the strong blurring of boundaries between work and private life, resources are exhausted, which reduces well-being. At the organizational level, the climate of universal availability fosters collective emotional exhaustion, which, in turn, is detrimental to corporate performance (Hüttermann & Bruch, 2019). In summary, employees in the negative scenario work less flexibly. As a result, their resources are gradually depleted, which negatively affects their performance and, ultimately, the company's performance as a whole.

The post-Corona era presents a unique opportunity to drive change and realize the positive scenario (Bruch, 2022). The Corona pandemic and associated lockdowns were a blueprint for the new world of work, and the experiences of that time have changed companies and their employees (Bruch et al., 2021). There will be no going back to the pre-pandemic days. Therefore, the post-Corona era represents a significant opportunity to implement change (Bruch, 2022). The results of this dissertation indicate that organizations should focus on digital play rules, the conscious usage of ICTs outside regular business hours, a culture of boundary control, avoiding a climate of universal availability, and promoting individual resources while reducing job pressure. Companies should use this phase to realize the favorable scenario and avoid the negative one. If the named levers are used correctly, mutual benefits are achieved in terms of increased company performance and simultaneously high employee health.

6.3.2 Orchestrating ICT Use Through Digital Play Rules

Managing ICTs in the new world of work is a necessity, not a choice. Therefore, organizations are recommended to establish rules that address after-hours accessibility. On the one hand, those rules should protect employees and executives from not being able to switch off and, on the other hand, provide them with sufficient freedom to use the potential of the new communication technologies.

It is recommended that the organization establish basic guidelines and leave the specific design of the play rules to the teams (Bruch, 2022). The respective teams can then agree with their team leader on how they want to deal with ICTs and accessibility. This approach ensures that the solution aligns with the team's tasks and considers the team members' preferences (Bruch, 2022). Moreover, research on organizational change shows that a sense of self-efficacy fostered by such a collaborative development process is associated with higher commitment to the change and increased satisfaction with the solution found (Oreg et al., 2011). The digital play rules must be applied by all team members so that unofficial communication norms do not undermine them. The responsibility for this lies with all team members, but especially with the team leader, who plays a particularly important role in fulfilling this task.

6.3.3 Conscious Usage of ICTs Outside Regular Business Hours

As leaders' ICT usage after hours might foster a climate of universal availability, the question arises whether executives should refrain from using ICTs outside regular business hours altogether? The empirical results of this dissertation and the necessities of the natural business world argue against this. ICT use after hours is a job resource for executives. Mobile technologies allow them to work regardless of time and location, which increases their work flexibility. This increased flexibility, in turn, translates into increased job performance. I.e., they achieve their respective goals, which subsequently is beneficial for company performance.

Therefore, executives should not be discouraged from using their ICTs for work-related purposes after hours. Instead, they should be made aware that ICT usage outside regular business hours is a behavior that should be explained in advance. For example, an executive who sends emails late at night should clarify that he or she does not expect an immediate response outside of the established working hours. Similarly, leaders should be aware that some employees deploy ICTs after hours as an impression management tactic (Schlachter et al., 2018). Therefore, employees who are constantly available should not be rewarded for this circumstance. Otherwise, there is a risk of creating a climate of constant availability.

In addition, all users of ICTs are recommended to use them consciously. Research has shown that ICT use has an “automatic and habitual, if not compulsive, character” and that it requires “self-discipline [...] to restrict ICT use and maintain work-life balance” (Schlachter et al., 2018, p. 830). For example, it is different to deliberately set aside two hours on the weekend to work through emails than to constantly monitor incoming messages on a day off. The former behavior can provide the necessary security to cope well with the demands of the coming week. The latter behavior, instead, can add to heightened stress levels.

Accordingly, both executives and employees are advised to be mindful of their use of ICTs. Organizations can support their workforce with mindfulness-based training and applications (Bostock, Crosswell, Prather, & Steptoe, 2019). This type of psychological intervention has been proven in over four hundred studies to be particularly effective in increasing individual well-being (van Agteren et al., 2021). The evidence suggests that mindfulness is particularly promising in dealing with ICTs, as mindfulness was found to foster positive coping with technostress (Tuan, 2022) and reduce obsessive behaviors (Fairfax, 2018).

6.3.4 Building a Culture of Boundary Control

This dissertation has shown that organizations in which the workforce perceives an elevated level of boundary control outperform organizations with a low level of boundary control. Employees in these companies do not feel that they must be available all the time. Instead, they share the common belief that they have control over the management of the lines between work and personal life. This psychological flexibility allows them to work according to their needs, which leads them to become more effective and healthier as a collective.

Therefore, based on the empirical evidence, I recommend that organizations develop a culture of boundary control. Two levers are fundamental in achieving this. On the one hand, organizations must create flexible structures, decentralize decision-making, and empower employees. On the other hand, they must promote the necessary competencies so that employees can implement the flexibility they have gained. This balancing act can be achieved through HR practices that encourage competencies. Companies that want to promote the competencies of their workforce should begin by systematically assessing competencies in order to then develop them in a targeted and courageous manner (Hesse & Bruch, 2021). Companies' incentive systems should consider this development by making the result count (results-oriented work) instead of the hours worked (Kossek, 2016).

6.3.5 Avoiding a Climate of Universal Availability

This dissertation shows that employees' shared perception that their company expects availability for work-related matters even after hours has devastating consequences for collective well-being in the respective organization. In such a climate, employees' resources are depleted over time, culminating in collective emotional exhaustion.

Climates emerge through a sense-making process in which organizational members comprehend and interpret the organization's "events, policies, practices, and procedures" that they encounter in their work setting (Ehrhart et al.,

2014, p. 2). Therefore, organizations should critically reflect on precisely these elements. For example, are there repeated projects where deadlines are so tight that they can only be successfully completed if the respective employees are constantly available for extended periods of time? Or are particularly those employees promoted who are always available? If HR managers and executives intervene at these points in advance, a climate of universal availability can be prevented.

If a climate of universal availability already exists, it should be addressed with countermeasures. For instance, Reid's (2015) case study of a consulting firm revealed that the ideal worker there is seen as someone "who is fully dedicated to work, such that [he/she] puts [his/her] work above everything else, including family, personal needs, and even [his/her] health" (p. 997). And that the ideal worker is "fully committed to [his/her] work and always available to it" (p. 997). The study showed that 57% of employees in this organization could not meet the requirements, with negative consequences for those affected.

In such a case, management should be proactive and clearly communicate the necessity of change. The focus of the message should be that constant availability is neither expected nor rewarded. Instead, employees should be given the freedom to draw the boundaries between work and private life themselves, in the form of collective boundary control. Companies should realize that this change endeavor takes time and must start from the top. The top management team plays a central role in any change process (Kotter, 1996), especially in digital transformation projects (Bruch, Jochmann, München, & Stein, 2019). But without involving the employees, it will not be possible to change availability norms in the company – their reactions will determine whether the initiative will fail or succeed (Oreg et al., 2011). One possibility would be to address availability norms in the company in workshops and town hall formats. During the process, progress should be measured through employee surveys. This dissertation provides a validated scale with good psychometric properties to capture the climate of universal availability, which is suitable for this purpose.

6.3.6 Promotion of Individual Resources and Reduction of Job Pressure: The Critical Role of Leadership

The dissertation showed that leaders and employees need resources to succeed in the era of constant connectivity. At the same time, it became apparent that companies should reduce job pressure as far as possible. Therefore, companies should foster individual resources and reduce job pressure to keep their workforce both successful and healthy in the era of constant connectivity.

Two resources that play a role in this context are individual boundary control and polychronicity. Boundary control promotes the health of individual employees – especially in contexts that are characterized by elevated levels of virtual communication. Polychronicity, on the other hand, helps to make the best possible use of the potential of information and communication technologies. Companies should use these insights to promote both boundary control and polychronicity. This dissertation shows that flexible structures and competency-enhancing HR systems are effective levers to promote boundary control in organizations. Moreover, organizations should pay attention to polychronic orientation in both personnel selection and staffing.

Furthermore, the dissertation shows that particularly pronounced job demands in the form of job pressure make it difficult to use the flexibility provided by smartphones. Those who are under high pressure and at the same time communicate intensively after hours put too much strain on themselves and thus exhaust their resources. Hence, organizations should ensure through effective work design that their employees are exposed to as few hindrance stressors (which are linked to adverse outcomes like emotional exhaustion) as possible (O'Brien & Beehr, 2019).

Effective leadership is an important lever when it comes to promoting individual resources and reducing job demands (Tummers & Bakker, 2021). Transformational leadership has proven to be particularly effective in this regard. A large number of empirical studies have found positive effects of transformational leadership on followers' job satisfaction and motivation (Judge & Piccolo,

2004) and on various performance criteria (G. Wang, Oh, Courtright, & Colbert, 2011). At the same time, meta-analytical findings show that this leadership style increases employee well-being (Montano et al., 2017).

Consequently, it is recommended to promote transformational leadership in the company to increase employees' resources and reduce job pressure. As a first step, a systematic survey should be conducted to determine how leadership behavior is perceived within the company. If it becomes apparent that transformational leadership is still underdeveloped, companies should first pay attention to personal characteristics associated with this leadership style during the personnel selection process (Judge & Long, 2012). The personality factor extraversion proved to be the strongest predictor of transformational leadership in this context (Bono & Judge, 2004). In addition, it was found that emotional stability and conscientiousness predict transformational leadership (DeRue, Nahrgang, Wellman, & Humphrey, 2011). Second, it has been shown that transformational leadership behaviors can be learned via leadership training (Antonakis, Fenley, & Liechti, 2011; Parry & Sinha, 2005). Therefore, companies should invest in such development programs.

6.4 Limitations and Directions for Future Research

“By definition, inference is an imperfect process.” (King et al., 1994, p. 8)

This dissertation is based on large-scale, multi-industry data from more than 24,233 employees from a total of 248 companies. Several aspects of the research design helped in alleviating common method bias (Podsakoff et al., 2012): First, two of the three studies used a split-sample design with information from several sources (e.g., study 3 included data from two different employee groups, as well as members of the top management team and the respective HR executive). Second, all studies comprise moderation hypotheses for which common method bias is less of a concern (Siemens et al., 2010). Finally, different measurement scales were used to lower the risk of common method bias (Podsakoff

et al., 2003). Likewise, the data were analyzed using current statistical methods at different levels (study 1: individual level; study 2: organizational level) and across levels (study 3: linking the organizational and the individual level). The result is a cross-level overall model that should take the complexity of reality into account in the best feasible way.

Despite these notable methodological strengths, this work, like all empirical work, is not without limitations. These limitations leave the door open for further research in this area and are pointed out below. First, all studies are based on cross-sectional designs. Cross-sectional designs can yield supportive evidence on relationships between variables and potentially eliminate alternative explanations (Spector, 2019). In addition, the models were developed upon thorough theoretical considerations. Nevertheless, due to the chosen study design, no clear causal conclusions can be warranted, and there is a risk of reverse causality. For instance, P. M. Wright et al. (2005) found that HR practices correlated not only with future firm performance but also with past and concurrent firm performance. Thus, it is quite possible that it is not HR practices that make firms successful, but rather that successful firms are more likely to be able to afford sophisticated HR practices. Similar considerations can be made with other variables from the models.

Therefore, I recommend that future researchers attempt to replicate the associations found using longitudinal designs, which allow stronger causal claims. In addition, these research designs have the advantage that it would be possible to investigate how long it takes for a climate of universal availability to develop or at what point a change in organizational design (e.g., toward more flexible structures) is accompanied by increased collective boundary control. The same applies to health outcomes: How long does it take for the resources of employees in a climate of constant availability to be drained to such an extent that collective emotional exhaustion develops? Or at what point do the health-promoting effects of boundary control become apparent? Diary studies could also be used to investigate not only differences between executives in their ICT use outside regular business hours but also differences in the communication behavior

of individual executives over several days. Exploring these questions is a fruitful direction for future researchers. In addition, the literature review revealed that most studies on ICT usage after hours apply either quantitative or qualitative research designs. Future research could use the best of both worlds by choosing mixed methods approaches (Johnson & Onwuegbuzie, 2004). While effect sizes can be estimated using quantitative techniques, qualitative approaches offer the means to uncover causal mechanisms (Hedström & Ylikoski, 2010).

Second, all analyses were based solely on subjective survey data, which carries with it the risk of measurement error (Lance, Dawson, Birkelbach, & Hoffman, 2010) and social desirability bias (Podsakoff et al., 2012). Therefore, it may be beneficial for further research in this area to use objective measures in future studies. For example, ICT use outside regular working hours could be tracked electronically. Similarly, objective performance data would increase the validity of the measurements.

And finally, like the majority of studies examining boundary dynamics (Allen et al., 2014), the three studies in this dissertation were conducted in Western contexts (in this case, Germany). Therefore, I would encourage researchers to examine the relationships of the models in other cultural contexts to see if the results are transferable to different contexts. For example, ICT use by executives might be perceived differently in collectivist cultures such as the Chinese. The question also arises as to whether boundary control in collectivistic cultures also has health-promoting and performance-enhancing effects.

6.5 Conclusions and Outlook

This dissertation examined how the potential of the new flexibility through ICTs can be used to promote both performance and well-being in organizations. Results based on empirical data from 24,233 employees and a total of 248 companies show that the conscious use of ICTs, particularly by executives, company

rules, individual resources, and the management of boundaries are vital factors to consider in this regard.

The new digitalized world of work offers an incredible amount of potential in terms of better health and performance. This thesis shows that leaders and HR management play a significant role in realizing this potential. I hope that my findings will stimulate further studies in this promising research area and help organizations and employees navigate through the era of constant connectivity successfully.

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Work Experience

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