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The Influence of Leadership on Employee's Work-Nonwork Interface and Well-Being: A Review and Intensive Longitudinal Study

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Preface

This doctoral thesis was carried out at the University of Barcelona (UB), and it contributed to the research line of the analysis of psychosocial processes and organizational behavior within the Department of Social Psychology and Quantitative Psychology at the Faculty of Psychology. Specifically, this thesis contributed to the research line of leadership and employee wellbeing. In addition to this, my professional involvement in two international research projects (Principal Investigator of the Universitat de Barcelona: Dr. Rita Berger) shaped this work. The first is called "Improving management competences on Excellence based Stress avoidance and working towards Sustainable organisational development in Europe" (IMPRESS), a Knowledge Alliances for higher education project (Project reference: 588315-EPP-1-2017-1-ES-EPPKA2-KA) funded by the Erasmus+ program of the European Union. This cooperation for innovation and the exchange of good practices conducted research across four European countries to analyze psychosocial processes related to occupational stress and wellbeing. It also developed advanced measurement instruments for a variety of antecedents, processes, and outcomes related to occupational health and safety. Empirical results of this project showed the existing challenges of occupational health practitioners and highlighted the need to investigate influencing factors of employee wellbeing in more detail. A main requirement was to enhance the knowledge on how leadership is linked to employee wellbeing. The second project is called "Excellence based profiling to identify and apply tools and trainings for a better and sustainable Work-Life-Flow" (WLF), a Strategic Partnership Project (Project Number: 2020-1-ES01-KA203-083282) also funded by the Erasmus+ program of the European Union. This project conducted research on how the contemporary dynamics around increasingly flexible work arrangements (e.g., working from home or anywhere, hybrid work arrangements, virtual work settings)

impact employees' wellbeing as a process that is highly influenced by interactions at the work-nonwork interface, a key variable of this thesis. Central result of this project was that fostering and maintaining employee wellbeing can only be achieved when considering the crucial role of spillover and recovery processes that reach into the nonwork domain. The research line of UB and both research projects fit and shaped the research topic, core constructs, and theoretical frameworks of the present thesis. Further down, the introduction of the present research objectives will highlight this strong alignment. Moreover, both projects adopted a scientist-practitioner perspective and are sought to produce high practically applicable outputs next to advancing scholarly work. In a similar vein, this thesis sought to not only conduct research to advance the frontiers of leadership and employee wellbeing research, but also to produce viable implications for practice.

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Abstract

Employee wellbeing (EWB) is a fundamental topic for individuals, organizations, and societies. In fact, given its link to the sustainable development goals of the United Nations and its relevance expressed by current reports published by the European Agency for Occupational Safety and Health and the International Labor Organizations, it represents a societal grand challenge that is worth addressing. Numerous contemporary working environments exhibit a growing trend of blurred lines between work and personal life, leading to spillover effects that significantly impact employees' recovery processes and well-being. Despite the emerging research on the leadership-wellbeing relationship, there remains an insufficient consideration of these processes. The vision of this thesis was therefore a future where practitioners and researchers approach the topic of EWB in a more holistic and sustainable way that includes not only work but also such related nonwork processes. In line with this, the general research objective was to investigate the complex relationship between leadership and employees' work-nonwork interface regarding EWB. To reach this general objective, two specific objectives were established, and two corresponding studies were carried out. Initially, the first study systematically reviewed the existing literature to organize the research landscape and to inform future research, including our second study. As no such review existed, we applied a narrative synthesis of 21 identified studies, following the PRISMA Extension for Scoping Reviews. As longitudinal research was deemed most suitable to adequately address these processes, the review focused on longitudinal studies: 1) long-term study designs, i.e., two or three wave designs, including group-randomized field trials, and 2) experience sampling method (ESM) designs such as daily diary studies. Building on previous research and following emerging research calls to view the leadership-EWB relationship from a more holistic perspective, we applied a

resource-demands process perspective to review the identified articles. Thereby, we fulfilled the conceptual aim to expand the leadership-EWB relationship by including spillover and recovery processes. The scoping review mapped the used theoretical and methodological approaches and analyzed research gaps. Consequently, theoretical, and methodological suggestions for future research were provided. Results show that more integration of the three related research streams (leadership, work-nonwork interface, EWB research) needs to be done at conceptual level. For example, while work-nonwork research is predominantly approached from a negative conflict-based view, leadership research focused more on positive than on negative leadership. The scoping review also resulted in an expanded model, the leadership-job demands-resources-recovery model. This model specifies two broad categories of the identified investigated mechanisms, namely bolstering/hampering mechanisms, and buffering/strengthening mechanisms. Findings also highlight the importance of personal energy resources, its investment at work and its recovery off-work. In this line, the need emerged to reevaluate performance-driven leadership styles, such as transformational leadership, regarding their potential influence on their followers' energy system. Based on the insights from the scoping review, and as a second step, an intensive longitudinal study was conducted. The objective of this study was to understand how transformational leadership affects the off-work recovery of daily personal energy resources via work engagement. The study utilized a 10-day design with two daily measurement points, involving 88 employees (n = 488). Drawing on the conservation of resources and broaden-and-build theory, we developed and tested two pathways – a resource-based and a demand-based pathway – that link the relationship between transformational leadership and work engagement to employee off-work recovery. The resource-based pathway operates through the daily building of resources, particularly enhanced role clarity.

Transformational leadership positively influences state work engagement, leading to increased daily role clarity. This, in turn, results in positive spillover effects, promoting better recovery, and ultimately contributing to increased overall EWB the following day. In contrast to the resource-based pathway, the demand-based pathway operates through increased challenging demands, specifically heightened workload. Transformational leadership's positive association with state work engagement leads to higher daily workload. Consequently, this generates negative spillover effects, decreasing recovery opportunities, and impairing EWB the next day. Multilevel path analyses of the data revealed the significance of these pathways, shedding light on the complex interplay between transformational leadership and EWB, including recovery processes. To sum up, the two innovative research studies included in the present thesis broadened the leadership-EWB literature by (1) advancing the theoretical, methodological, and practical knowledge of this topic through the scoping, and by (2) providing empirical evidence for the derived theoretical leadership-job-demands-resources-recovery model through the intensive longitudinal study.

Keywords: Leadership, employee wellbeing, work-nonwork interface, spillover, recovery, scoping review, diary study, transformational leadership, personal energy, longitudinal

Resumen

El bienestar del empleado (BDE) es un tema fundamental para individuos, organizaciones y sociedades. De hecho, dada su relación con los objetivos de desarrollo sostenible de las Naciones Unidas y su relevancia expresada en informes actuales publicados por la Agencia Europea para la Seguridad y la Salud en el Trabajo y la Organización Internacional del Trabajo, representa un gran desafío social que merece ser abordado. Numerosos entornos laborales contemporáneos muestran una tendencia creciente de difuminar la frontera entre el trabajo y la vida personal, lo que conduce a efectos de desbordamiento que impactan significativamente sobre los procesos de recuperación y el bienestar de los empleados. A pesar de la investigación emergente sobre la relación liderazgo-bienestar, aún existe un abordaje insuficiente de estos procesos. La visión de esta tesis es, por lo tanto, un futuro en el que los profesionales e investigadores aborden el tema del BDE de manera más holística y sostenible, que incluya no sólo el trabajo sino también los procesos no laborales relacionados. Relacionado con el anterior punto, el objetivo general de la tesis fue investigar la compleja relación entre el liderazgo y la interfaz trabajo-no trabajo de los empleados con respecto al BDE. Para alcanzar este objetivo general, se establecieron dos objetivos específicos y se llevaron a cabo dos estudios en relación a los mismos. En el primer estudio se revisó sistemáticamente la literatura existente para organizar el marco teórico de referencia y orientar futuras investigaciones, incluyendo el segundo estudio que compone la presente tesis. Al no existir revisiones similares, se aplicó una síntesis narrativa de 21 estudios identificados, siguiendo la Extensión PRISMA para Revisiones Exploratorias (del inglés “PRISMA Extension for Scoping Reviews”). Dado que la investigación longitudinal se consideró el enfoque más adecuado para abordar estos procesos, la revisión se centró en estudios longitudinales: 1) diseños de estudio a largo

plazo, es decir, diseños de dos o tres medidas temporales, incluidos estudios de campo aleatorizados (i. e. grupos al azar), y 2) diseños basados en métodos de muestreo de experiencias, como estudios de diario. Basándonos en investigaciones anteriores y siguiendo la reiterada demanda en investigaciones emergentes para ver la relación liderazgo-BDE desde una perspectiva más holística, aplicamos una perspectiva de proceso de recursos y demandas para revisar los artículos identificados. En consecuencia, cumplimos el objetivo conceptual de ampliar la relación liderazgo-BDE al incluir los procesos de desbordamiento y recuperación. La revisión exploratoria mapeó los enfoques teóricos y metodológicos utilizados y analizó las lagunas en la investigación. Como consecuencia, se proporcionaron sugerencias teóricas y metodológicas para futuras investigaciones. Los resultados muestran que es necesario integrar más las tres corrientes de investigación relacionadas (liderazgo, interfaz trabajo-no trabajo, investigación del BDE) a nivel conceptual. Por ejemplo, mientras que la investigación trabajo-no trabajo se aborda predominantemente desde una perspectiva de conflicto negativo, la investigación sobre el liderazgo se centró más en el liderazgo positivo. La revisión generó también como resultado un modelo ampliado, el modelo de liderazgo-demandas-recursos-recuperación. Este modelo especifica dos categorías amplias de los mecanismos investigados identificados, a saber, mecanismos de fortalecimiento/obstaculización y mecanismos de amortiguamiento/fortalecimiento. Los hallazgos también resaltan la importancia de los recursos de energía personal, su inversión en el trabajo y su recuperación fuera de éste. En esta línea, surgió la necesidad de reevaluar los estilos de liderazgo orientados al rendimiento, como el liderazgo transformacional, en cuanto a su influencia potencial en el sistema de energía de sus seguidores. En base a los hallazgos de la revisión exploratoria y en una segunda fase, se llevó a cabo un estudio longitudinal intensivo. El objetivo de este estudio fue

comprender cómo el liderazgo transformacional afecta a la recuperación fuera del trabajo de los recursos diarios de energía personal a través del compromiso laboral. En el estudio se empleó un diseño longitudinal con una recogida durante 10 días y dos puntos de medición diarios en el que participaron 88 empleados (n = 488). Basándonos en la teoría de la conservación de recursos y la teoría de ampliación y construcción, desarrollamos y probamos dos vías: una vía basada en recursos y una vía basada en demandas, que vinculan la relación entre el liderazgo transformacional y el compromiso laboral con la recuperación fuera del trabajo de los empleados. La vía basada en recursos opera a través de la construcción diaria de recursos, especialmente la claridad de roles mejorada. El liderazgo transformacional influye positivamente en el compromiso laboral, lo que conduce a una mayor claridad de roles diaria. Este hecho, a su vez, resulta en efectos positivos de desbordamiento, promoviendo una mejor recuperación y, en última instancia, contribuyendo a un mayor BDE general al día siguiente. En contraste con la vía basada en recursos, esta vía basada en demandas opera a través de mayores demandas desafiantes, específicamente una mayor carga de trabajo. La asociación positiva del liderazgo transformacional con el compromiso laboral conduce a una mayor carga de trabajo diaria. En consecuencia, esto genera efectos negativos de desbordamiento, reduciendo las oportunidades de recuperación y afectando el BDE al día siguiente. El análisis de trayectorias multinivel de los datos revelaron la importancia de estas vías, arrojando luz sobre la compleja interacción entre el liderazgo transformacional y el BDE, incluidos los procesos de recuperación. En resumen, los dos estudios de investigación incluidos en la presente tesis amplían la literatura existente sobre liderazgo-BDE al (1) avanzar en el conocimiento teórico, metodológico y práctico en este ámbito a través de la revisión exploratoria, y (2) proporcionar evidencia

empírica para el modelo teórico derivado de liderazgo-demandas-recursos-recuperación a través de un estudio longitudinal intensivo.

Palabras clave: Liderazgo, bienestar del empleado, interfaz trabajo-no trabajo, desbordamiento, recuperación, revisión exploratoria, estudio de diario, liderazgo transformacional, energía personal, análisis de datos intensivos.

Resum

El benestar del treballador (BDT) és un tema fonamental per a individus, organitzacions i societats. De fet, donada la seva relació amb els objectius de desenvolupament sostenible de les Nacions Unides i la seva rellevància expressada en informes actuals publicats per l'Agència Europea per a la Seguretat i la Salut en el Treball i l'Organització Internacional del Treball, representa un gran desafiament social que val la pena abordar. Nombrosos entorns laborals contemporanis mostren una tendència creixent de difuminar la frontera entre el treball i la vida personal, la qual cosa condueix a efectes de desbordament que impacten significativament als processos de recuperació i el benestar dels treballadors. Malgrat la investigació emergent sobre la relació lideratge-benestar, encara hi ha un abordatge insuficient d'aquests processos. La visió d'aquesta tesi és, per tant, un futur en el què els professionals i investigadors abordin el tema del BDT d'una manera més holística i sostenible, que inclogui no només el treball sinó també els processos no laborals relacionats. Relacionat amb aquest punt, l'objectiu general de la tesi era investigar la complexa relació entre el lideratge i la interfície treball-no treball dels treballadors pel que fa al BDT. Per assolir aquest objectiu general, es van establir dos objectius específics i es van dur a terme dos estudis relacionats amb aquests objectius. Al primer estudi es va revisar sistemàticament la literatura existent per organitzar el panorama de la investigació i orientar futures investigacions, incloent-hi el segon estudi que composa la present tesi. Donat que no existien revisions similars, es va aplicar una síntesi narrativa de 21 estudis identificats, seguint l'Extensió PRISMA per a Revisions Exploratòries (de l'anglès "PRISMA Extension for Scoping Reviews"). Donat que la investigació longitudinal es considerava l'enfocament més adequat per abordar aquests processos, la revisió es va centrar en estudis longitudinals: 1) dissenys d'estudis a llarg termini, és a dir, dissenys de dues o tres mesures temporals, incloent-hi

estudis de camp aleatoritzats (i. e. grups a l'atzar), i 2) dissenys basats en mètodes de mostreig d'experiències, com ara estudis de diari. Basant-nos en investigacions anteriors i seguint la demanda reiterada en recerca emergent per veure la relació lideratge-BDT des d'una perspectiva més holística, vam aplicar una perspectiva de procés de recursos i demandes per revisar els articles identificats. En conseqüència, vam complir l'objectiu conceptual d'ampliar la relació lideratge-BDT al incloure els processos de desbordament i recuperació. La revisió exploratòria va mapejar els enfocaments teòrics i metodològics utilitzats i va analitzar les mancances de recerca. Com a conseqüència, es van proporcionar suggeriments teòrics i metodològics per a futures investigacions. Els resultats mostren que cal una major integració de les tres corrents de recerca relacionades (lideratge, interfície treball-no treball, recerca del BDT) a nivell conceptual. Per exemple, mentre que la investigació treball-no treball s'aborda predominantment des d'una perspectiva de conflicte negatiu, la investigació sobre el lideratge es va centrar més en el lideratge positiu. La revisió va generar també com a resultat un model ampliat, el model de lideratge-demandes-recursos-recuperació. Aquest model especifica dues categories amples dels mecanismes investigats identificats, concretament, mecanismes d'enfortiment/entorpiment i mecanismes d'amortiment/enfortiment. Els resultats també destaquen la importància dels recursos d'energia personal, la seva inversió en el treball i la seva recuperació fora d'aquest. En aquesta línia, va sorgir la necessitat de reelaborar els estils de lideratge orientats al rendiment, com ara el lideratge transformador, pel que fa a la seva influència potencial en el sistema d'energia dels seus seguidors. En base als resultats de la revisió exploratòria i com a segona fase de la tesi, es va dur a terme un estudi longitudinal intensiu. L'objectiu d'aquest estudi era comprendre com el lideratge transformador afecta a la recuperació fora del treball dels recursos diaris d'energia personal a través del

compromís laboral. A l'estudi es va emprar un disseny longitudinal amb recollida durant 10 dies amb dos punts de mesura diaris en el que participaren 88 treballadors (n = 488). Basant-nos en la teoria de la conservació de recursos i la teoria d'ampliació i construcció, vam desenvolupar i provar dues vies: una via basada en recursos i una via basada en demandes, que vinculen la relació entre el lideratge transformador i el compromís laboral amb la recuperació fora del treball dels treballadors. La via basada en recursos opera a través de la construcció diària de recursos, especialment la claredat de rols millorada. El lideratge transformador influeix positivament en el compromís laboral, la qual cosa condueix a una major claredat de rols diària. Aquest fet, al seu torn, resulta en efectes positius de desbordament, promocionant una millor recuperació i, en última instància, contribuint a un major BDT general el dia següent. En contraposició a la via basada en recursos, aquesta via basada en demandes opera a través de majors demandes desafiants, específicament una càrrega de treball més elevada. L'associació positiva del lideratge transformador amb el compromís laboral condueix a una càrrega de treball més alta diària. En conseqüència, això genera efectes negatius de desbordament, reduint les oportunitats de recuperació i afectant el BDT al dia següent. L'anàlisi de trajectòries multinivell de les dades van revelar la importància d'aquestes vies, aclarint la complexa interacció entre el lideratge transformador i el BDT, inclosos els processos de recuperació. En resum, els dos estudis de recerca inclosos a la present tesi amplien la literatura existent sobre lideratge-BDT al (1) avançar en el coneixement teòric, metodològic i pràctic d'aquest tema a través de la revisió exploratòria, i (2) proporcionar evidència empírica per al model teòric derivat de lideratge-demandes-recursos-recuperació a través d'un estudi longitudinal intensiu.

Paraules clau: Lideratge, benestar dels empleats, interfície treball-no treball, desbordament, recuperació, revisió exploratoria, estudi de diari, lideratge transformacional, energia personal, anàlisi de dades intensives.

Chapter 1: Introduction and General Theoretical Frame

In this introductory chapter, we delve into the fundamental aspects of our research and present the general theoretical frame. Project vision and approach will be explained, and core concepts of this doctoral thesis will be clarified to establish a shared theoretical foundation. General and specific research objectives will be defined, and main contributions highlighted. The last section of this chapter outlines the structure of the thesis to enable readers to navigate through the thesis.

1.1. Project Vision and Approach

The present research thesis investigated the influence of leadership on employees' work-nonwork interface and employee wellbeing (EWB). In the following, project vision and approach will be presented. Next to communicating vision and overall methodological approach, we provide the reasoning behind this research endeavor and highlight the need to push scientific knowledge of this topic further.

The principal reasons for why we focused on EWB as dependent variable were as follows. To begin with, EWB is an important topic for individuals, organizations, and societies alike (Diener et al., 2020; Madrid et al., 2014; UN Assembly, 2015). At individual level, EWB is linked to a range of psychological and physical health indicators (Inceoglu et al., 2018), as it is underpinned by biological, cognitive, and psychosocial processes (Diener et al., 2020). Effective interventions that aim to promote EWB are therefore crucial for a healthy individual and social functioning. Although EWB is a topic usually investigated at the individual level, more contemporary research emphasizes that EWB is more complex, which is why a multi-level and process-oriented perspective needs to be adopted when investigating influencing factors (Bakker et al., 2023; Berger & Czakert, 2022; Ilies et al., 2015; Quijano et al., 2008; Reif et al., 2018). Thus, the challenge related to multiple levels is to understand EWB from a

systemic perspective that links individual factors with environmental factors at, e.g., group-, leader-, or organizational level (Berger & Czakert, 2022; Inceoglu et al., 2021; Nielsen et al., 2017). This is also in line with psychosocial research emphasizing the role of context for individual psychological outcomes, such as Lewin's well-established force-field theory (1939). Leadership is seen as a particularly important environmental factor for EWB, since research showed that it may influence other environmental factors at different levels, including group-level and organizational-level factors (e.g., Bakker & de Vries, 2021; Berger et al., 2019; Berger & Czakert, 2022; Czakert & Berger, 2022). The other challenge related to the process-perspective is that EWB needs to be understood as a function of different processes that evolve over time, including processes during and after work that are linked to each other (Bakker & de Vries, 2021; Inceoglu et al., 2021; Sonnentag et al., 2022). It also includes the challenge to understand different temporal dynamics of influencing factors, including dynamic and more stable factors (Bakker et al., 2023).

At organizational level, EWB has primarily been of interest as a pivotal antecedent for relevant work outcomes. As such, research has shown that EWB is associated with creativity (Davis, 2008; To et al., 2012), work engagement (Ouweneel et al., 2012), quality social relationships (Diener et al., 2020), collaborative behavior (McGrath et al., 2017), job performance (Kaplan et al., 2009), and organizational citizenship behavior (Dalal, 2005). Noteworthy, next to interests related to optimal human resource functioning, protecting workers health, and fostering occupational health and safety has both ethical and legal reasons (Bocean et al., 2022; EU-OSHA, 2023; International Labor Organization, 2021). For all these reasons, EWB represents an important competitive advantage for modern business organizations (Nielsen et al., 2017). Nowadays, several challenges for organizations regarding EWB arise: Work-

related stress seems omnipresent globally, as indicated by Gallup's recent report (Gallup, 2023). In Europe, a significant trend towards more psychosocial and emotional challenges than physical challenges such as ergonomic issues at work can be observed (EU-OSHA, 2023). Additionally, while a report states that 70% of employers forecast increased importance of EWB in the coming years (TK, 2023), another report states that 45% of employees perceive that their employer is not supporting their wellbeing sufficiently (Adecco, 2022). Another study found that companies with EWB issues show significantly lower levels of productivity, decreases in employer attractivity, and weaker company growth, compared to companies that manage EWB appropriately (Topjob, 2023). Given these challenges, and considering the systemic perspective, a clear need to better understand the influencing factors of EWB emerges, including the role of leadership and its capacity to shape other influential factors (Bakker et al., 2023; Berger & Czakert, 2022; Inceoglu et al., 2021).

At societal level, the sustainable development of the global society depends on several factors, represented in the sustainable development goals (SDGs) of the agenda 2030 set out by the United Nations (2015). From a psychosocial occupational health perspective, two of these goals might be of principal importance, namely to "Ensure healthy lives and promote well-being for all at all ages" (SDG 3) and to "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (SDG 8) (Berger & Czakert, 2022). Linking SDG 3 and SDG 8, fostering and sustaining EWB can be understood as societal grand challenge (Kunisch et al., 2023), but also as an organizational challenge for sustainable organizational development (Nielsen et al., 2017). It thus emerges as a business imperative for organizations as actors within society that goes beyond merely economic interests (EU-OSHA, 2023; Kunisch et al., 2023). Nonetheless, it should be noted that

the total cost related to mental health problems across Europe are estimated to be more than 4% of the GDP, while loss of productivity of the workforce has the largest share (Santini et al., 2022). Therefore, and beyond these clear economic burdens for societies, management and occupational psychology researchers increasingly call management of organizations to tackle such "grand challenges" related to sustainable development at society level (George et al., 2016; Kunisch et al., 2023; Seelos, 2023). This makes the investigation of leadership's influence on EWB highly relevant for individuals, organizations, and societies.

This doctoral research addressed these challenges of fostering and sustaining EWB. We envision a future where leaders in organizations approach the topic of EWB in a more holistic and sustainable way that includes not only work but also related nonwork processes, as EWB-related processes are not only located in work domain (Bakker et al., 2023; Wells et al., 2023). We also envision a future where leadership and EWB researchers include the role of spillover and recovery processes when analyzing leadership-EWB relationships, as they play a crucial role for EWB that is still under-researched (Sonnentag et al., 2022). We wanted to achieve this by providing researchers, scholars, and practitioners with an integrated map of state-of-the-art insights about these processes that will guide EWB analysis and interventions in organizations, and by providing new empirical insights on the role of leadership on day-to-day EWB.

Considering the importance placed on EWB, emerging studies and reports indicate a significant jeopardy facing EWB, making it progressively challenging for leaders to enhance EWB or mitigate employee distress (Adecco, 2022; Kniffin et al., 2021; Rudolph et al., 2021). Particularly, one key assumption of the present thesis was that engaging in important off-work recovery processes crucial to EWB seem more

challenging for many employees (Adecco, 2022; Sonnentag et al., 2022). Moreover, following this assumption, we assumed that this effect has been amplified by the emergence of more flexible and remote work contexts (McKinsey, 2021) and an increased blurring of the boundaries between work and nonwork (Cham et al., 2021; Sonnentag et al., 2022). It was also argued that remote work synergized the physical boundary between an employee's work and nonwork space, thereby challenging psychological boundaries between the two domains (Wells et al., 2023). We therefore concluded that a stronger focus on spillover and recovery process across the work-nonwork interface seems needed when we want to know how leadership affects EWB. To do so, a focus on longitudinal leadership-EWB research was necessary, as they best capture these rather dynamic short- and long-term processes underlying EWB (Sonnentag et al., 2022). However, it became apparent that only little effort has been undertaken to organize longitudinal leadership-employee outcome research (Kelemen et al., 2020). To the best of our knowledge, no leadership-EWB review existed that focuses specifically on the work-nonwork area with spillover and recovery-related longitudinal research. In addition to that, one of our assumptions was that related research was scarce (Bennett et al., 2018; Sonnentag et al., 2022), partially because such research is complex and requires proper direction. Therefore, scoping this relatively young yet emerging research landscape was a particular important first step, as guidance in form a consequent mapping of related theoretical approaches, used concepts, and investigated mechanisms was missing yet. Particularly, intensive longitudinal studies as the one envisioned in a second step of this thesis project are complex and would benefit from methodological orientation in the form of an overview of prevalent methodological issues and potential remedies. We therefore conducted as a first step a

scoping review to systematically synthesize the state-of-the-art of longitudinal research on the leadership-EWB relationship with a focus on spillover and recovery processes.

Moreover, the conducted scoping review enabled us to identify important research gaps that warrant further empirical research. For example, that research on the relationship between leadership and employee recovery is scarce in general, and that within-person and multilevel research designs are widely lacking. Additionally, that favorable or unfavorable implications of positively connotated leadership styles for daily off-job recovery are still unclear, which is of high relevance for our second study. The scoping review also provided us theoretical and methodological guidance for our second work, an intensive longitudinal study. Specifically, the second study addressed how transformational leadership affects subsequent off-work recovery processes of daily personal energy resources via daily work engagement. Focusing on energy resources as crucial for EWB (Crain et al., 2018), we were able to extend previous research by integrating an energy-enriching (resource-based) and an energy-depleting (demand-based) pathway to highlight a potential double-edged sword effect of the transformational leadership-work engagement relationship on off-work recovery and EWB in a daily diary study design.

To realize the vision of empowering leaders and organizations to adopt a more holistic approach to EWB and to address the above-mentioned research gap regarding the role of leadership regarding spillover and recovery processes across the work-nonwork interface, the project made the following contributions. It provided an integrated resource-demands based process perspective and expanded the leadership-EWB relationship by including work-nonwork spillover and recovery processes. It also mapped the used theoretical approaches and analyzed research gaps and offered a list of the issues and potential remedies of applied methodologies to orient further research.

Finally, it highlights potential dark and bright sides of the transformational leadership-work engagement relationship regarding recovery, emphasizing the role of balancing personal energy on a day-to-day basis.

The subsequent paragraphs fulfill the aim of defining the scope of the research topic and elucidating the process through which we derived precise research objectives from the aforementioned project vision. Due to the presence of these research objectives in subsequent chapters that outline the individual studies, redundancies in terms of the rationale behind these objectives are inevitable. Therefore, the arguments or references presented in this introduction will resurface in later chapters. Drawing upon the stated vision and approach, we subsequently elucidate the core concepts of this thesis.

1.2. Employee Well-Being (EWB) From a Holistic and Process-Oriented Perspective

In line with current research propositions (e.g., Arnold, 2017; Bakker et al., 2023; Inceoglu et al., 2018), the thesis research presented here proposes that EWB can be understood as a multifaceted individual-level construct that can manifest in different ways, such as in emotions and affect, physical health, cognitive functioning, and social relationships. Related to this, the World Health Organization defines health as “a state of complete physical, mental and social well-being” (World Health Organization, 2021), and therefore combines these physical, mental, and social elements of wellbeing. In this instance, it appears that the concepts of health and wellbeing are closely linked (Yao et al., 2021).

In occupational psychology research, EWB has been defined as experiences of feeling good and/or experiences of fulfillment and purpose (Sonnentag, 2015). It therefore focuses primarily on the mental element of wellbeing.

This advanced combination of two positive experience categories (i.e., feeling good and/or fulfilled) stems from two traditionally different perspectives, that are, the hedonic and the eudaimonic perspective (Taris & Schaufeli, 2015). The hedonic perspective emphasizes its affective dimension and the elements of pleasure and satisfaction (i.e., feeling good), while the eudaimonic perspective relates to its motivational dimension and a purposeful life. This evolution has led to different conceptualizations of wellbeing, varying in their focus on either hedonic, eudaimonic, or combinations of elements of both perspectives (Taris & Schaufeli, 2015).

To encompass both perspectives in the present study, we choose the above-mentioned definition by Sonnentag (2015) for the present thesis research. However, as will be detailed further down, we thoughtfully classify different wellbeing concepts in our review and empirical research works to account for potential effect differences (Inceoglu et al., 2018; Montano et al., 2017; Taris & Schaufeli, 2015).

Wellbeing research is also strongly related to stress research, especially in occupational psychology. Particularly, as humans seem to have an evolutionary in-built negativity bias, often coined by the phrase “bad is stronger than good” (e.g., Baumeister et al., 2001), it might be useful to also define a separate yet related construct to the absence of wellbeing, that is, illbeing. Illbeing results from a health impairment process and is represented through symptoms such as exhaustion, anxiety, stress, negative emotions, etc. (Bakker & Demerouti, 2007; Bakker et al., 2023). Illbeing is not the antidote of wellbeing, as people may have independently from each other positive and negative feelings at the same time (Diener & Emmons, 1984). However, due to the presence of the negativity bias and the omnipresence of work stress in today’s working world (Gallup, 2023), it is useful to also approach the topic of EWB from a combined perspective that accounts for both processes that bolster EWB and processes that aim to

identify and mitigate relevant stress factors (Bakker et al., 2023). Indeed, focusing on work-related stressors seems predominant in the occupational health research landscape, as opposed to a more positive psychology- and resource-based approach (Peiró et al., 2021).

The most prominent EWB and work-nonwork theories use the general concepts of resources—"those entities that either are centrally valued in their own right (e.g., self-esteem, close attachments, health, and inner peace) or act as a means to obtain centrally valued ends (e.g., money, social support, and credit)" (Hobfoll, 2002, p. 307) and demands—"structural or psychological claims associated with role requirements, expectations, and norms to which individuals must respond or adapt by exerting physical or mental effort" (Voydanoff, 2004, p. 398). Usually, resources and demands may differ in terms of locality (personal or contextual resources/demands) and in terms of their domain (work or nonwork resources/demands) (Czakert et al., 2022a; ten Brummelhuis & Bakker, 2012; von Allmen et al., 2023).

For the present thesis, we therefore decided to address both resource-based and demand-based processes, as well as to address positive wellbeing and negative illbeing factors in our EWB conceptualization to capture both outcomes, to enrich the overall insight.

The conventional conceptualization defines EWB as a domain-specific (i.e., related to the work-domain) component of overall general wellbeing. From this perspective, EWB is one facet of overall wellbeing, the latter being influenced by other domain-specific wellbeing dimensions (family wellbeing, leisure wellbeing, etc.) (Kuykendall et al., 2015; Lesener et al., 2019; Warr, 1999). However, this perspective seems rather static and too narrow given the increasingly blurred boundaries of the diverse life domains, particularly the ones between work and nonwork. Current views

on EWB therefore emphasize that it is a dynamic concept (Bakker & de Vries, 2021; Inceoglu et al., 2021; Sonnentag, 2015), influenced by both work and nonwork processes that unfold over time. In other words, a narrow, domain-specific view on EWB that primarily focuses on experiences at work would be shortsighted and neglect the real-world processes that happen after the workday ended and before the new workday starts (Diener et al., 2017; Sonnentag et al., 2022). A more dynamic and holistic process perspective of EWB is needed when we want to gather insights on how to sustain EWB over time (Inceoglu et al., 2021). We therefore adopt such a dynamic perspective for this thesis. Dynamic EWB can fluctuate over time (Sonnentag, 2015). Accordingly, sustainable EWB may then represent dynamic EWB that can be sustained for a period of time (Di Fabio, 2017).

In this sense, we conceptualized EWB as a function of demands, resources, and nonwork (spillover and recovery) processes. This perspective focuses on the mental element of wellbeing, includes the hedonic and eudaimonic perspectives, includes demands linked to illbeing as well as resources related to wellbeing, and includes a dynamic process-oriented perspective. In other words, this allowed us to understand EWB as a continuum ranging from acute positive feelings of pleasure and/or fulfilment that occur in a single workday to more persistent and sustained forms of such experiences, where nonwork processes influence the occurrence and persistence of these processes. These nonwork processes will be detailed in the subsequent chapter.

1.3. The Work-Nonwork Interface as the Connecting Link for the EWB Dynamic

The present thesis research emphasizes the work-nonwork interface as a pivotal concept for EWB, as it adds a dynamic element of spillover and recovery processes to the EWB conceptualization and thereby links work processes with related nonwork processes. Notably, we chose the term work-nonwork interface because scholars have

argued that the magnitude of different terminologies related to the study of interrelationships between work and nonwork have overly fragmented the research landscape and thus hindered scholarly advancement in the area (Beigi et al., 2019).

The work-nonwork interface can be defined as "the interaction of employee work experiences and [nonwork] lives" (Allen, 2012, p. 1163), where both negative (i.e., conflict and demand-based) and positive (i.e., enriching and resource-based) spillover and recovery processes can happen in various forms (e.g., Bowling et al., 2010; Geurts et al., 2005; Hanson et al., 2006).

The work-nonwork interface is of great current and future relevance (International Labor Organization, 2022; Sonnentag et al., 2022; von Allmen et al., 2023). Researchers in the field have argued that in the near future, "boundaries between work and life outside work will become more permeable" (Sonnentag et al., 2022, p. 12.19-12.20), and therefore increase the emergence of spillover processes that would affect crucial recovery processes. In other words, perceived working conditions and related psychosocial working experiences will become more pertinent for related off-work recovery processes. Over the past few decades, recovery research has shown that recovery is not only vital to protecting and fostering EWB, but also for other business-related outcomes such as motivation and job performance (Sonnentag et al., 2022).

Theoretically, the need to balance effort at work and subsequent recovery from work has gained more importance in the well-established effort-recovery theory (Mejmann & Mulder, 1998). Other theoretical frames, such as the work-home resource model (ten Brummelhuis & Bakker, 2012) and spillover theory (Geurts et al., 2005) have added to this perspective that personal energy resources are the linking pin between the work and nonwork domain. Working conditions have also been linked to recovery processes in a so-called job-demands-resources-recovery model (JD-R-R;

Kinnunen et al., 2011). The latter has received meta-analytical support (Bennett et al., 2018), showing that models that incorporate the concept of recovery have higher explanatory validity than models that only focus on working conditions. These different models allow the integration of diverse perspectives. Doing so, we assumed that working conditions and personal energy resources interact and subsequently affect recovery processes after the workday. Notably however, it should be stated that longitudinal research in this area is still scarce and needs increased attention to build more robust conclusions (Bennett et al., 2018). Given these theoretical fundaments and few empirical validations, it can be observed that leadership has not yet been integrated sufficiently into the JD-R-R. In fact, the work-nonwork interface has been rarely of interest in previous leadership-EWB research. Moreover, by comparing predominant streams of leadership research with the ones in work-nonwork research, we noticed that leadership has focused rather on positive leadership and resource-based process, whereas work-nonwork research has focused mainly on some form of work-nonwork conflict and demand-based processes (Czakert & Berger, 2023; Kossek et al., 2021; Montano et al., 2017).

1.4. Leadership as an Important Contextual Macro Factor for EWB

The present research thesis builds on the existing research line of leadership and its influence on EWB. It is our principal assumption that leadership perceptions and leader behaviors influence EWB, which is supported by numerous empirical research (e.g., Arnold, 2017; Inceoglu et al., 2018; Montano et al., 2017; Harms et al., 2017; Teetzen et al., 2022; Yao et al., 2021). In addition to this, the interest of leadership's influence on EWB has recently grown even more, because leadership has a particularly prominent role in times of crisis, such as the COVID-19 pandemic and the related disruptive changes in the world of work (Cotofan et al., 2021; Inceoglu et al., 2021;

Kniffin et al., 2021; Rudolph et al., 2020). In fact, it is a basic premise that leadership is particularly, though not exclusively, needed in critical situations and when work becomes stressful, thus threatening EWB (Harms et al., 2017; Kniffin et al., 2021; Teetzen et al., 2022).

There is numerous evidence for the claim that leadership might be the most important social influence at work. The World Happiness Report of 2021 showed that the perception of the manager was the biggest driver of EWB during the crisis (Cotofan et al., 2021), highlighting leaders' special role in crisis times. Besides, recent research suggests that the role of leadership for EWB is not diminished by physical distance through remote work settings (Dolce et al., 2020; Lundqvist et al., 2022). This indicates that the role of leadership for EWB is unlikely to diminish in the future working world, characterized by more flexible work arrangements (Sonnentag et al., 2022).

Most importantly, leaders and direct supervisors can be seen as architects of the work environment (Bernstein et al., 2014; Czakert & Berger, 2022). This is in line with Katz and Kahn's social environment model (1978), that posits leaders as part of this environment and therefore shape employee's perception of work characteristics. As such, it was argued that direct supervisors may influence as a higher-order contextual factor other psychosocial working conditions and thereby influence EWB (Bakker & De Vries, 2021, Schaufeli, 2015; Teetzen et al., 2022). In other words, whereas "good" leaders foster a work environment that sets conditions conducive for EWB, "bad" leaders create and/or tolerate a work environment that may result in illbeing and hamper EWB (Schaufeli, 2015). We provided empirical support for both scenarios and the higher-order perspective on leadership (Berger et al., 2019; Czakert & Berger, 2022). Likewise, within our work at the IMPRESS project, we could see that leadership can act as resource or a demand, thus bolstering or hampering EWB (Czakert et al., 2022b).

Yet, despite the existing research results regarding the leadership-EWB relationship, five significant research gaps appear. Firstly, leadership research suffers the endogeneity problem, as it is predominantly based on cross-sectional research designs (Antonakis et al., 2014). This said, it undermines the basic principles of temporal sequential order necessary to infer cause and effect. Secondly, leadership research has for a long history included EWB mainly as a secondary means to increase job performance and has therefore insufficiently analyzed the link between leadership and EWB in detail (Inceoglu et al., 2018). Thirdly, and central for the present research thesis, the leadership-EWB relationship has been investigated mostly using a rather static perspective of EWB, including static working conditions and static cross-sectional EWB indicators (Taris & Schaufeli, 2015; Sonnentag, 2015). The current emerging developments in EWB research, including spillover and recovery processes, have not yet been sufficiently considered in the leadership-EWB relationship. Indeed, the topics of the work-nonwork interface, and especially off-work recovery, have largely been overseen when investigating the influence of leadership on EWB (Sonnentag et al., 2022).

Fourthly, although more integrative and dynamic multilevel models of EWB have emerged (Bakker & De Vries, 2021) that include leadership and recovery processes, existing conceptualizations seem limited: labelling the concept of recovery under “self-regulation” (Bakker & De Vries, 2021, p. 6) might arguably accentuate the personal responsibility of the employee to engage in recovery processes if needed. And although the paper by Bakker and De Vries (2021) further proposes that leaders “may either facilitate adaptive self-regulation strategies, such as recovery and job crafting, or increase personal and job resources among their employees.” (Bakker & De Vries, 2021, p. 12), it remains unclear how these processes unfold in detail. Fifthly, a recent

meta-analysis on the effect of work-nonwork interventions concluded that increasing personal resources seems more relevant than increasing contextual resources, such as leadership (von Allmen et al., 2023). However, how related contextual and personal resources or demands may influence each other remains unanswered. The question how recovery-supportive leadership looks like needed more specific methodology and theory.

To summarize the research gaps in a nutshell, we identified a clear need to expand the EWB concept holistically through a multilevel and process-oriented perspective, a need to integrate the processes at the work-nonwork interface (spillover and recovery processes) into the leadership-EWB relationship, a need to identify the relationships between influencing factors, and a need to identify adequate research methodologies. Our focus therefore was on longitudinal research that addressed leadership and its influence on employees' work-nonwork interface and EWB.

1.5. Research Objectives

As a result of the above-stated, the general objective of this research project was to examine the complex relationship between leadership and employees' work-nonwork interface regarding EWB.

General research objective: to investigate the complex relationship between leadership and employees' work-nonwork interface regarding EWB.

Chapter 2 and 3 contain more detailed justification for why we chose this main research objective. Researching such a complex process was a logical next step for the advancement of knowledge regarding the leadership-EWB relationship. The understanding of how leadership influences not only experiences during work but also

after the workday enhances practical applicability and theoretical development of EWB-oriented leadership behaviors.

The general objective followed two specific research objectives.

Specific research objective 1: to provide a state-of-the-art overview by means of scoping review.

As no review existed that could orient longitudinal leadership-employee wellbeing research with a focus on recovery and spillover processes at the work-nonwork interface, the first specific research objective of this thesis was thus to provide a state-of-the-art overview of this relatively small yet emerging research landscape. Therefore, and to orient the subsequent empirical work of the present project, we decided to conduct a scoping review. Further justification of why we opted for a scoping review and not a systematic review will be given in detail in chapter 2. Notably, a scoping review is in its essence a systematic review. To ensure this systematic approach, we followed the PRISMA extension for scoping reviews (Tricco et al., 2018), and applied a systematic quality appraisal of the studies.

The second specific research objective was, based on the results of the scoping review, to study how positive leadership influences employees' work-nonwork interface and wellbeing in situ by means of an intensive longitudinal study.

Specific research objective 2: to study how leadership influences employees' work-nonwork interface and wellbeing in situ by means of an intensive longitudinal study.

Based on the results of the scoping review, a two-week daily diary study was designed to test a complex model including transformational leadership, daily work engagement, daily job characteristics, daily spillover processes, and daily employee

wellbeing. This model builds on the results of the scoping review and sought to close identified and relevant research gaps. Particularly, we aimed to highlight that transformational leadership might influence both recovery-facilitating and recovery-hindering processes, which would bolster and hamper daily EWB. The detailed research hypotheses are given in chapter 3.

1.6. Contribution to EWB Research

The present research project contributes to EWB research in three main ways. Firstly, the scoping review maps longitudinal evidence of leadership-related and work-nonwork interface-related factors that influence EWB systematically. Following this, it organizes and hierarchically orders these influencing factors, assuming leadership as a higher-order contextual factor that influences other resources and demands at individual, group, and organizational level. The differentiation of individual, group, leadership, and organizational factors conducive to EWB has been done by previous research (Nielsen et al., 2017), but special emphasis on leadership as a stand-alone factor has been largely neglected (Schaufeli, 2015) and merely assumed on a more abstract level (ten Brummelhuis & Bakker, 2012; Bakker & De Vries, 2021). Moreover, as it contributes to the scarce research that links working conditions with spillover and recovery processes, it facilitates more insights on the different pathways that underlie work-nonwork processes. Thus, this organization of influencing factors connects mechanisms between factors at different levels and within different domains (work and nonwork domain) and therefore helps to advance our knowledge on the antecedents of EWB.

Secondly, as this research project focuses on longitudinal research, the conducted scoping review answers research calls of EWB research to conceptualize EWB as a dynamic process that transcends increasingly blurred boundaries between the

work and nonwork domain (Bakker & De Vries, 2021; Sonnentag, 2015; Sonnentag et al., 2022). The present adopted resource-demands-based process perspective helped to expand the EWB concept accordingly, and therefore offers a more nuanced view on the underlying processes that explain variation in EWB.

Thirdly, the intensive longitudinal study adds to the few empirical within-subject research that links leadership to spillover and off-work recovery processes, highlighting that leaders may either bolster or hamper EWB, and/or either buffer or strengthen resource- and demand-based processes that affect EWB. By emphasizing the important role of personal energy resources for EWB (Crain et al., 2018; Quinn et al., 2012), we advocate the use of affect-driven theories when researching dynamic EWB (e.g., Russell, 1980) instead of departing from a leadership effectiveness point of view (Inceoglu et al., 2018). More specifically, we provide empirical evidence for the claim that daily personal energy resource investments at work are influenced by transformational leadership, and that these investments may both energy-enriching and energy-depleting pathways. We therefore contribute to EWB research as we show that personal energy resources spill over from work to nonwork and explain variation in daily EWB.

1.7. Contribution to Leadership Research

The present thesis project contributes to leadership research in five significant manners. Firstly, as detailed above, leadership research has not yet been sufficiently oriented towards EWB as a crucial outcome in itself. Leadership effectiveness is primarily measured by its impact on optimizing performance and performance-related constructs, such as work engagement (Inceoglu et al., 2018). The present research project therefore contributes to the emerging yet insufficient leadership-EWB research. Secondly, and perhaps the primary contribution of this thesis, it integrates the work-

nonwork interface concept into the leadership-EWB relationship research. This was an important advancement for a deeper understanding of how leadership may influence directly and indirectly spillover and recovery processes, two central variables of our EWB definition.

Thirdly, and more specifically, the scoping review contributes by offering a resource-demands based process perspective on the issue. The resulting new integrated theoretical model, the leadership-job-demands-resources-recovery model was another main contribution. This model may be tested and refined in future research. Fourthly, the review also shall provide effective guidance for future research, both theoretically and methodologically. We hope to inspire and navigate more scholars to embark on these complex research endeavors to push the knowledge in this field further.

Fifthly, another principal contribution lies in the testing of a parallel sequential multilevel mediation model of the intensive longitudinal study. This empirical model builds on the results of the previously conducted scoping review. The intensive longitudinal study is the first of its kind to examine the effect of leadership on EWB including daily job characteristics, daily work-nonwork spillover processes and daily off-work recovery processes together. It is also the first that uncovers how transformational leadership may be both, beneficial and detrimental to daily off-work recovery processes. It therefore adds substantially to the current research stream that investigates the potential dark sides of transformational leadership by within-subject research.

1.8. The Perspective of the Erasmus+-Funded Research Projects

The present research project was partially developed in the context of two Erasmus+-funded research projects and has been strongly shaped by their perspective.

The IMPRESS project “Improving management competences on Excellence based Stress avoidance and working towards Sustainable organisational development in Europe” (Project reference: 588315-EPP-1-2017-1-ES-EPPKA2-KA) investigated from 2019-2022 psychosocial work characteristics and its impact on work stress. Therefore, IMPRESS adopted a perspective on intangibles, focusing on optimal human functioning and human systems within organizations (Berger & Czakert, 2022). More specifically, it applied the Human System Audit (HSA), a framework to explain organizational behavior and an integrated model for the assessment of intangibles at work and for the intervention of the Human System (Quijano et al., 2008). It adopted a differentiated perspective by arguing that leadership might act as both a resource and a demand (Berger & Czakert, 2022; Czakert & Berger, 2022). Additionally, it placed particular importance on the role of health-promoting leadership, stated as follows: “By virtue of the inherent power of the leader’s position over the work environment, this level of analysis may be of particular importance for creating a resource-rich work environment” (Berger & Czakert, 2022; p. 73). This perspective aimed to push the frontiers regarding EWB-oriented leadership further.

The second project “Excellence based profiling to identify and apply tools and trainings for a better and sustainable Work-Life-Flow” (WLF; Project Number: 2020-1-ES01-KA203-083282) put particular emphasis on the dynamic transformations in the world of work towards more flexible working arrangements. It therefore placed associated increased blurred boundaries and more challenging recovery processes at the center of attention. In doing so, it put the work-nonwork interface into the spotlight when researching EWB and sustainable business development (Czakert et al., 2022). Foci of this research were therefore to investigate antecedents and outcomes of favorable and unfavorable processes at the work-nonwork interface at multiple levels,

including personal and contextual factors. Review and survey research showed the real-world need to position the work-nonwork interface at center stage when targeting EWB (Berger et al., 2023a; Wells et al., 2023). The WLF perspective shaped the present research thesis work and vice versa, as it enriched our understanding of the particular importance of the work-nonwork interface for sustainable EWB.

1.9. Summary

We conducted the research presented here to investigate how leaders influence employees' work-nonwork interface and EWB. Building on previous research and recent reports, we argued that the modern working world characterized by increasingly flexible work arrangements and increased use of technology will further erode the boundaries between work and nonwork. Therefore, more holistic perspectives of EWB need to be adopted when investigating the influence of leadership on EWB. To this end, we included two central constructs of the work-nonwork interface, namely spillover and recovery processes, into the leadership-EWB relationship. We also focused our research on longitudinal and more dynamic research designs that allow to capture within-subject relationships. We addressed several research gaps by systematically reviewing existing related research in form of a scoping review. We built on the results of this scoping review and further collected diary data to put the proposed idea of the leadership-job demands-resources-recovery model to the test.

1.10. Structure of the Thesis

The previous paragraphs serve as a general introduction to the research topic, including background information on the research questions, the chosen methodology and the chosen constructs. The following second chapter details the first published study, the scoping review. The third chapter reports the second study, a diary study on how transformational leadership affects the off-work recovery of daily personal energy

resources via work engagement. The fourth chapter discusses the research objectives, key outcomes of the research, main findings, as well as theoretical and practical implications of the two conducted studies. The fifth chapter provides a general conclusion and merges the individual contributions of the two studies for the advancement of the present research line on leadership and EWB.

1.11. Publications That Derive From the Thesis

Chapter 2 – Scoping review (open access)

- Czakert, J. P., & Berger, R. (2023). The Influence of Leadership on Employees' Work-nonwork Interface and Wellbeing: A Scoping Review. *Current Psychology*. https://doi.org/10.1007/s12144-023-04762-3 (Impact Factor: 2.80 (2022), Q2).

Chapter 3 – Intensive longitudinal study

- Czakert, J. P., Leiva Ureña, D., Berger, R. (2023). *How Transformational Leadership Affects the Off-work Recovery of Daily Personal Energy Resources via Work Engagement: Resource and Demand-based Pathways* [Manuscript submitted for publication]. Departament de Psicologia Social i Psicologia Quantitativa, Universitat de Barcelona.

Chapter 2: Study 1 – Scoping Review

Note: This study relates to specific research objective 1: to provide a state-of-the-art overview by means of a scoping review.

Title: The Influence of Leadership on Employee's Work-Nonwork Interface and Wellbeing: A Scoping Review

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2.1. Abstract

Working conditions are increasingly characterized by a blurring of the work and nonwork with spillover that impacts employees' recovery processes and wellbeing. Although research is emerging, the consensus is that these processes are insufficiently included in the leadership-wellbeing relationship. The main aim of this study, therefore, was to enhance our understanding of the role of leadership on employee's work-nonwork interface and wellbeing. To address these processes adequately, longitudinal research is the most appropriate. To our best of knowledge, no review exists that could inform longitudinal studies on the leadership-employee wellbeing relationship with a focus on spillover and recovery processes. Following the PRISMA Extension for Scoping Reviews, we apply a narrative synthesis of 21 identified studies to organize the research landscape. We make three main contributions: First, we adopt an integrated resource-demands based process perspective and expand the leadership-employee wellbeing relationship by including spillover and recovery. Second, we map the used theoretical approaches and analyzed research gaps. Third, we offer a list of the issues and potential remedies of applied methodologies to orient further research. Results show, that while work-nonwork research is predominantly approached from a negative

conflict-based view, research focused more on positive rather than on negative leadership. We identify two broad categories of investigated mechanisms, namely bolstering/hampering mechanisms, and buffering/strengthening mechanisms. Findings also highlight the importance of personal energy resources and therefore call for more attention to affect-driven theories. The identified predominance of the IT and healthcare sectors and working parents warrants more representative research. We offer recommendations to advance future research both theoretically and methodologically.

Keywords: Leadership, Work-Nonwork Interface, Wellbeing, Recovery, Review, Longitudinal

2.2. Introduction

The Sustainable Development Goals 3 (Health and well-being) and 8 (Decent work and economic growth) of the United Nations (United Nations, 2015) and the reports of the European Agency for Safety and Health at Work (2022a, 2022b) reflect the growing importance and attention to employee wellbeing (EWB) – feeling happy and/or fulfilled during work (Sonnentag, 2015) – as a fundamental human aspiration, an increasing societal concern, and a basis for policymaking. Despite its relevance, recent reports and research suggest that EWB is at significant risk and that bolstering EWB or buffering illbeing is becoming an increasingly difficult leadership task (Adecco, 2022; Kniffin et al., 2021; Rudolph et al., 2020). Particularly, engaging in important off-work recovery processes crucial to EWB seem more challenging for many employees (Adecco, 2022; Sonnentag et al., 2022). This effect has been amplified by the emergence of more flexible and remote work contexts (McKinsey, 2021) and an increased blurring of the boundaries between work and nonwork (Cham et al., 2021; Sonnentag et al., 2022).

Moreover, although decades of leadership research have demonstrated that both positive leadership (referring to favorable scores on all sorts of leadership behavior instruments) and negative leadership (its antithesis) have a significant impact on EWB, especially in times of crisis (Rudolph et al., 2020), the considerable number of nonsignificant results found for leadership-EWB interventions indicate that more research needs to be done in this area (Nielsen & Taris, 2019). However, from a leadership research and organizational perspective, EWB has been studied primarily because of its critical importance to organizational interests, i.e., to increase job performance (e.g., Diener et al., 2020; Nielsen & Taris, 2019). Although the research about the leadership-EWB relationship has increased over the past few years (Arnold, 2017; Harms et al., 2017; Inceoglu et al., 2018; Montano et al., 2017; Yao et al., 2021), the predominant focus on leadership-performance relationships has treated EWB rather as a secondary outcome variable, resulting in a narrow-focused understanding of EWB (Inceoglu et al., 2018; Montano et al., 2017). Specifically, whereas the research field on EWB has already evolved towards a more holistic work-nonwork perspective, including spillover and recovery processes (Inceoglu et al., 2018; Nielsen & Taris, 2019; Sonnentag et al., 2022), this work-nonwork perspective has yet to be widely applied in the leadership-EWB research. Until now, work domain-specific relationships between leadership behavior and performance-related aspects remain predominant. As a result, leaders' potential influence on employee's work-nonwork interface, including spillover and recovery processes, still remains a black box. Yet, there is widespread agreement that incorporating recovery and spillover processes in the study of the leadership-EWB relationship is crucial for improving our understanding of EWB's evolution over time (Bakker & De Vries, 2021). To do so, a focus on longitudinal leadership-EWB research

is thus needed, as they best capture the dynamic short- and long-term processes underlying EWB (Sonnentag et al., 2022).

Generally, surprisingly little effort has been undertaken to organize longitudinal leadership-employee outcome research (Kelemen et al., 2020). To the best of our knowledge, no leadership-wellbeing review exists that focuses specifically on the work-nonwork area with spillover and recovery-related longitudinal research. However, a consequent mapping of the related theoretical approaches, used concepts, and investigated mechanisms is highly warranted to open the leadership-wellbeing research for the current context and to orient future longitudinal studies in this complex field conceptually. Additionally, intensive longitudinal studies are complex and would benefit from methodological orientation in the form of an overview of prevalent methodological issues and potential remedies. Regarding practical implications, it is necessary for appropriate diagnosis, interventions and policymaking to provide new insights for leaders and Human Resources that help to address recovery and spillover processes in design and training for bolstering EWB – and buffering illbeing respectively. Therefore, it is necessary to improve the understanding linkages between work and nonwork processes.

To fill this lacuna, the general objective of this study was to enhance our understanding of spillover and recovery processes within the leadership-EWB relationship by means of a qualitative scoping review focusing on longitudinal studies. We want to answer four questions: First, which investigated theoretical approaches and concepts can be identified in this particular field? Second, what categories of mechanisms under study can be identified? Third, which theoretical issues can be identified? Fourth, which methodological issues and potential remedies can be identified?

The scoping review contributes to the leadership-EWB literature in three main ways. Firstly, by adopting an integrated resource-demands based process perspective, we include the significant role of spillover and recovery processes and expand and organize the leadership-EWB literature accordingly. In doing so, we open avenues for leadership-EWB research for the investigation of resources and demands across the work-nonwork interface, implicating that leaders can also influence spillover and off-work recovery processes. We also demonstrate that related research is too reliant on leadership theories that are rooted in leadership-performance relationships, whereas research would benefit from EWB-grounded theories (Russell, 1980; Weiss & Cropanzano, 1996) as a starting point for theory development.

Secondly, by categorizing the used concepts and mechanisms in the leadership-EWB relationship across the work-nonwork interface, we inform future research about the limitations of used theories and mechanisms and highlight the areas that need further development. We identify a wide range of different applied theories while showing that a coherent integral theory is lacking. And while positive psychology approaches, related theories, and concepts (positive spillover, positive EWB) all need more attention, negative leadership behaviors and styles – especially absent leadership – also warrant more investigation. We also discuss issues of broad leadership conceptualizations versus specific behaviors. Regarding modelling options, the main takeaway is the identification of two main categories of mechanisms that may be challenged or tested in future studies: Based on positive psychology (e.g., Waters et al., 2021), we propose to differentiate leadership-EWB relationships between bolstering/hampering mechanisms (i.e., leadership as a predictor) and buffering/strengthening mechanisms (i.e., leadership as a moderator).

Thirdly, methodological issues of the screened papers are highlighted, and potential remedies are discussed to advance future research. The review resulted in articles including a vast array of different methodological designs, including randomized field trials, multiple wave studies, and mainly diary studies. We identify methodological limitations of these screened studies originating in design, results, and external validity, and highlight potential remedies. Finally, we offer recommendations for related future research both theoretically and methodologically to push the knowledge frontiers of this research field further.

We structure our review in four main sections: the first section underlines the theory we used for our review; next, we describe the methodology that we applied to search and code papers; the third section identifies the theoretical approaches, categorizes the researched mechanisms, and presents the findings on theoretical and methodological issues. The fourth section discusses the findings in light of the theory and suggests implications for scholars, practitioners, and policymaking.

2.3. Underpinning Theory

To integrate work-nonwork research including spillover and recovery processes into the leadership-EWB relationship, we add a dynamic process perspective to the relatively static resource-demand perspective.

Resource-demands perspectives based on Hobfoll's (1989) conservation of resources theory and occupational psychology derivates such as the job demands-resource model (Bakker & Demerouti, 2007) have been widely used in EWB (Inceoglu et al., 2018) and leadership research (e.g., Schaufeli et al., 2015; Kelemen et al., 2020), and have been successfully adapted for work-nonwork interface research through the work-home resources model (ten Brummelhuis & Bakker, 2012). The resource-demand-based perspective generally distinguishes between resources, i.e., aspects that potentially help

individuals to maintain their wellbeing, on the one hand, and demands, i.e., aspects that potentially impair wellbeing, on the other hand (Berger et al., 2019; Quinn et al., 2012; Lesener et al., 2019). This perspective explains how interactions of these factors result in either wellbeing or illbeing. Resources and demands may be categorized into contextual (e.g., working conditions) and personal (e.g., human energy) factors (ten Brummelhuis & Bakker, 2012).

The work-nonwork interface adds spillover and recovery processes to the distinction of resources and demands and can be referred to as "the interaction of employee work experiences and [nonwork] lives" (Allen, 2012, p. 1163), where both negative (i.e., conflict or strain-based) and positive (i.e., enriching) spillover and recovery processes can happen in various forms (e.g., Bowling et al., 2010; Geurts et al., 2005; Hanson et al., 2006). Spillover theory has a long history in work-nonwork and EWB research (Bowling et al., 2010; Edwards & Rothbart, 2000), is based on role theory (Kahn et al., 1964), and assumes that experiences in one domain, e.g., the work domain, influence experiences in the other domain, e.g., the nonwork domain. Regardless of the spillover quality (i.e., positive, representing a resource, or negative, representing a demand), one of our key assumptions is that increasingly blurred boundaries between work and nonwork due to digitalization and flexibilization increase the probability of spillover processes occurring (Cham et al., 2021; Sonnentag et al., 2022). This means that, for example, psychophysiological load reactions that result from encountering work-related demands could affect more easily important recovery processes and consequently EWB (e.g., Bennett et al., 2018; Parker et al., 2021; Sonnentag & Schiffner, 2018; Sonnentag et al., 2022). Spillover processes from work to nonwork may thus be seen as the linking pin between demands and resources experienced at work and related recovery processes off-work (Edwards & Rothbart,

2000). Daily recovery processes in turn are crucial to restoring resource losses, e.g., in the form of experienced psychophysiological energy depletion during work time (Meijman & Mulder, 1989; Sonnentag et al., 2022). Previous meta-analyses have highlighted the importance of recovery processes for EWB (Bennett et al., 2018; Steed et al., 2021). The meta-analysis by Bennett et al. (2018) showed that the related job demands-resources-recovery model (JD-R-R) (Kinnunen et al., 2011) explains EWB better than models that do not take recovery processes into account. We thus expand the JD-R-R model by adding leadership and spillover processes to the equation.

Specifically, our review focuses on leadership behaviors as they are more closely related to spillover, recovery processes, and EWB as proximal outcomes of leadership behaviors than leadership characteristics (Inceoglu et al., 2018). We understand leadership behavior as an influencing process (Antonakis & Day, 2017; Schippers & Hogenes, 2011; Yukl, 2013) and as a core contextual concept for EWB by influencing employees' perception of personal and contextual resources and demands. In this sense, leadership behavior can be seen either as a contextual resource (e.g., forms of positive leadership behaviors) or a contextual demand (e.g., forms of negative or absent leadership behaviors) (e.g., Berger et al., 2019; Schaufeli, 2015). As such, we assume that the way leaders may influence EWB underlies two distinct mechanisms. Firstly, leaders may shape both, resources and demands, and thereby bolster or hamper EWB (which we later refer to as bolstering/hampering mechanisms). Notably, boundary conditions for leadership apply here, depending on the leaders' role capacity to change working conditions (Bakker & de Vries, 2021; Nielsen & Taris, 2019). Secondly, a leader may be seen as a resource or demand itself that buffers or strengthens stressor-strain relationships (which we later refer to as buffering/strengthening mechanisms). To further organize the literature, we use a wide approach and classify both specific

leadership behaviors and more broad styles as positive or negative, or absence of behavior, including task and relationship orientation (Gurt et al, 2011; Kelloway & Gilbert, 2017). The categories of positive (i.e., leadership as a resource), negative (i.e., leadership as a demand), absence of leadership (i.e., leadership as a demand) (Aasland et al., 2010; Wang et al., 2021) have shown to impact EWB differentially (Montano et al., 2017). The related distinction between task-related and relationship-related leadership support has also been applied in leadership-EWB research (e.g., Yao et al., 2021).

We conceptualize EWB as a function of demands, resources, spillover and recovery processes. This perspective allows us to understand EWB as a continuum ranging from acute positive feelings of pleasure and/or fulfillment that occur in a single workday to more persistent and sustained forms of such experiences, where spillover and recovery processes influence the occurrence and persistence of these processes. We thus understand EWB as an individual-level multidimensional concept (Arnold, 2017) that is dynamic in nature: Dynamic EWB may be defined as a desirable state of "feeling good and/or experiencing fulfillment and purpose" (Sonnentag, 2015, p. 262) related to work, thus consisting of affective wellbeing (i.e., feeling good) and psychological wellbeing (i.e., experiencing fulfillment and purpose) elements. Dynamic wellbeing can fluctuate over time (Sonnentag, 2015). Accordingly, sustainable EWB may then represent dynamic EWB that can be sustained for a period of time (Di Fabio, 2017).

2.4. Method

2.4.1. A Primer on the Choice for Conducting a Scoping Review

The present study carries out a scoping review of longitudinal research on the leadership-work-nonwork interface-EWB relationships to examine how research is conducted on this specific field. Specifically, we aimed to identify key theoretical

approaches and concepts, the mechanisms that have been applied as well as any methodological issues (Munn et al., 2018). We are of the opinion that the current types and forms of evidence valuable to practitioners in the field of leadership and EWB needs further expanding (Arksey & O'Malley, 2005; Munn et al., 2018). Since our primary aim is to identify, map, and discuss concepts, a scoping review is the most suitable evidence synthesis approach (Munn et al., 2018), because they are particularly effective at identifying clear knowledge gaps. Scoping reviews have also proven to be highly effective at highlighting predominant methods (e.g., Callary et al., 2015), which was also of primary interest. Scoping reviews are only slightly different from systematic reviews in the following aspects: 1) Prior registration of the review protocol is not required; 2) critical appraisal is not mandatory; and 3) a generation of quantitative "summary findings" is not aim of the study (Munn et al., 2018).

2.4.2 Scoping Review Procedure

The scoping review was based on the Preferred Reporting Items for Systematic Review and Meta-Analysis Extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018) to ensure methodological and reporting quality. To avoid potential research duplication, the PROSPERO International Prospective Register of Systematic Reviews database had been preliminary searched for similar already undergoing reviews. No registered review matched the present study objectives, so the review process was continued.

Following guidance on the conduct of narrative synthesis in systematic reviews by Popay et al. (2006) and Siddaway et al. (2019), the individual research questions formed the basis of a refined search strategy. To ensure standardized data collection, a standardized data abstraction form was created by the first author to determine which data to extract for this specific study, the second author revised and agreed on this form.

This data abstraction form was based on the research objectives and summarizes information regarding author, year, study design, sample, sample size, leadership style/behavior/theory, main findings, and main limitations of the study. Leadership behavior was coded as positive or negative. EWB was coded as positive or negative EWB, affective, psychological, or combinations of both. The third concept, work-nonwork interface, was coded as positive spillover versus negative spillover approaches, and recovery. The mechanisms were coded as bolstering/hampering mechanisms versus buffering/strengthening mechanisms taking into account the theoretical and methodological positioning of leadership, being a predictor (bolstering/hampering) or moderator (buffering/strengthening) in the leadership-EWB relationship.

We grouped the articles into two broad categories, based on their design. Studies in category 1 deployed a long-term study design, i.e., two or three wave design, including group-randomized field trials. Studies in category 2 deployed the experience sampling method (ESM) to account for short-term relationships with EWB.

2.4.3 Literature Search and Selection

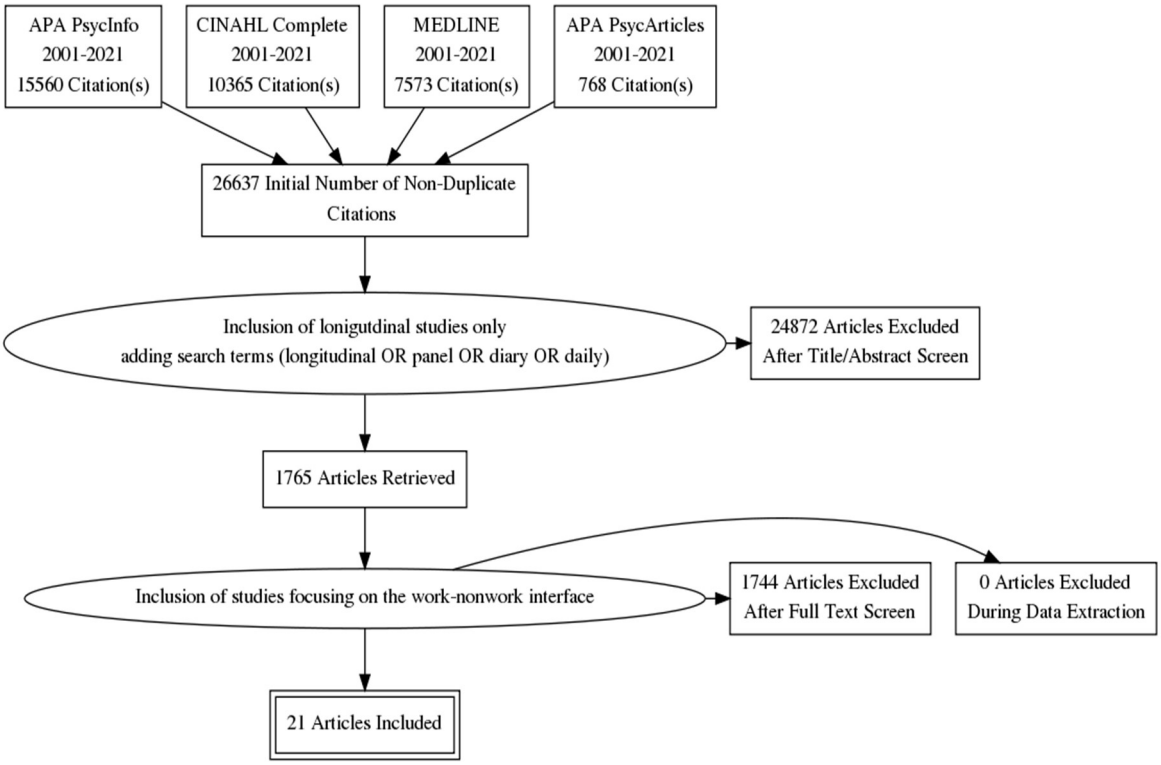
The literature search was conducted independently by two reviewers in February 2021: MEDLINE, CINAHL, PsycInfo, and PsycArticles databases were screened using the EBSCOhost research platform and special sections of COVID-19 research on researchgate.net and of journals for empirical peer-reviewed studies published between 2001-2021 in English. Conceptual dissertations, abstracts, books, and unpublished studies were excluded. Theoretical studies were excluded from this review. Cross-sectional studies, case series, and case reports were also excluded.

The search strategy followed a multi-step procedure, in which further criteria were subsequently added after each step (see also Montano et al., 2017). The main

terms of the initial search were “leadership” and “wellbeing”; related terms were defined through thesaurus browsing and were combined with the appropriate Boolean operators AND/OR (see Appendix A for complete search terms and strings). We applied search strings that included related terms from Montano et al. (2017), including terms such as e.g., “transform* leader*” or “health-oriented leader*”, “positive affect”, “health issues”. This search yielded 26.637 articles. Since this review focused on longitudinal findings, we added the terms “longitudinal or panel or diary or daily*” to refine the search, resulting in 1.765 articles (= 6.6%). These articles were screened by title and abstract for the inclusion of spillover and recovery processes, represented in terms based on Beigi et al. (2019), who provided a taxonomy of work-nonwork-related constructs, and included terms such as e.g., “work-nonwork interface”, “work-nonwork spillover”, or “work–home interface”. A hand search of the reference lists in each of the retrieved papers was performed to find further potentially eligible papers. However, all additionally screened papers that addressed the topic of leadership as a predictor of EWB did not account for the work-nonwork interface (e.g., Xanthopolou et al., 2012), and papers that addressed dynamic EWB did not specifically address leadership as antecedent (e.g., Peiró et al., 2019). Finally, the selection process yielded a final number of 21 articles, with almost perfect agreement between the two reviewers (Cohen’s κ = 0.99) (Landis & Koch, 1977). All discrepancies were resolved by a third reviewer. Figure 1 illustrates the study flow of the review search and selection process.

Figure 1

PRISMA Study Flow Chart



To identify methodological issues, and to evaluate the quality of reported evidence in a systematic way, the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (Guyatt et al., 2008) was used, as this approach ensures a well-established transparent and simple quality appraisal. Since the GRADE system is predominantly used in clinical research – Cochrane reviews –, reasons for grading were adapted to the present research aim. Specifically, the quality of each paper was assessed in duplicate analyzing method (e.g., sampling, temporal lenses), results (e.g., effect sizes, potential confounding effects) and limitation parts. Following GRADE, the following four classifications for quality of evidence were used: High quality (further research is very unlikely to change our confidence in the estimate of effect); Moderate quality (further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate); Low quality (further research is very likely to have an important impact on our confidence in the

estimate of effect and is likely to change the estimate); Very low quality (any estimate of effect is very uncertain).

2.5. Results

In Table 1 and 2, we provide a summary of all the articles identified for our review. To begin with, while screening publications within the period of 2001 – 2021, our literature review provides evidence that researching endeavors regarding leadership as contextual variable for EWB longitudinally have only begun about ten years ago (e.g., Hornung et al., 2011). As expected, the number of identified research papers was rather small with $N = 21$. It is worth noting that more than half of our screened articles (= 52.4%) were published between 2018-2021. This demonstrates that there is increased interest in this research topic.

Table 1

Category 1 Articles Identified for Review and Summaries

Nr.	Reference (Year)	Method			Theoretical Approach		Key Findings
		Sample	Sample size	Study design (Data collection duration & frequency)	Leadership Influence	Overall framework	
1	Davis et al. (2015)	IT workers	93	1 year (2-wave)*	Family Supportive Supervisor Behavior	Work-home resources model	Intervention (including FSSB) leads to significant increase in parent-child shared time.
2	Demerouti et al. (2013)	Working parents in Japan	471	1 year (2-wave)	Support	Role theory	Supervisor support leads to work-self facilitation. Work-self facilitation leads to decreased psychological distress and increased happiness.
3	Fan et al. (2019)	IT workers	1610	18 months (2-wave)	Family Supportive Supervisor Behavior	Job Demands Resource Model (JDR)	FSSB leads to increased decision authority (job strain resource) and increased schedule control (time strain resource), increased job satisfaction and decreased emotional exhaustion.
4	Hornung et al. (2011)	German hospital physicians	159	1 year (2-wave)	Leader consideration	Employee centered	Leader consideration leads to increased development and flexibility idiosyncratic

						production centered	deals (i-deals). Development i-deals related positively to work engagement; flexibility i-deals related negatively to work-family conflict.
5	Liang et al. (2018)	Full-time employees	168	1 year (2-wave)	Abusive Supervision	Self-determination theory (SDT)	Abusive supervision leads to somatic complaints via ruminative thinking about work.
6	Liu et al. (2021)	Nurses	266	9 weeks (3-wave)*	Meaningfulness communication	Transactional Model of stress; Event system theory	Interventions (including leader communication) significantly decreased perceived COVID-19 crisis strength and increased work meaningfulness. Work meaningfulness moderates the negative impact of COVID-19 on an employee's work engagement and taking charge at work.
7	Moen et al. (2016)	IT workers	867	1 year (3-wave)*	Family Supportive Supervisor Behavior	Job Demand Control Model (JDC)	FSSB does not mediate the effects of the intervention to reduced work-family-conflict nor reduced burnout, nor reduced psychological distress.
8	Munir et al. (2012)	Danish elderly care workers	188	18 months (2-wave)	Transformational Leadership	Transformational leadership theory	Transformational leadership leads to decreased work–life conflict, increased job satisfaction and increased psychological wellbeing. Work–life conflict mediated between

							transformational leadership and wellbeing, but not job satisfaction.
9	Stocker et al. (2019)	Swiss employees	208	13.8 months (2-wave)	Appreciative leadership	Stress-as-offense-to-self (SOS) theory	Appreciation by supervisors moderated the effects of interruptions on the four parameters of employees' well-being: job satisfaction, self-efficacy, job-related depressive mood, and sleep problems.

Note. * Group-randomized field trial.

Table 2

Category 2 Articles Identified for Review and Summaries

Index-Nr.	Reference (Year)	Method			Theoretical Approach		Key Findings
		Sample	Sample size	Study design	Leadership Influence	Overall framework	
1	Barnes et al. (2020)	Italian employees	127	Diary 10 Days (1 MP)	Leader sleep devaluation	Abusive Supervision; Self-regulation; Social learning theory (SLT)	Sleep devaluing leader behavior leads to decreased sleep quality, which in turn leads to increased unethical behavior

2	Blanco-Donoso et al. (2017)	Spanish Nurses	74	Diary 5 Days (2 MP)	Supervisor support	Conservation of resources (COR) theory	Coworker support -but not supervisor support -, psychological detachment and relaxation minimize the unfavorable effects on well-being of difficulties in emotion regulation.
3	Breevaart and Bakker (2018)	Dutch teachers	271	Diary 10 Days (1 MP)	Transform-ational leadership behavior	Job demands–resources (JD-R) theory	Daily transformational leadership behavior does not buffer the hindering effect of family-work conflict on employees' engagement; Daily transformational leadership moderates the paths between daily challenging demands as well as daily hindrance demands on work engagement
4	Breevaart and Tims (2019)	Dutch teachers	271	Diary 10 Days (1 MP)	Supervisor support	Conservation of resources (COR) theory	Supervisor support is particularly important on days when exhaustion is high and is crafted more often followers perceive low (vs. high) job insecurity.
5	Cangiano et al. (2019)	Full-time employees	94	Diary (5-7 Days, 3 MP)	Punitive Supervision	Self-determination theory (SDT); Stressor-detachment model	Punitive supervision moderates the daily negative effects of proactivity on end-of-workday anxiety, and hence bedtime detachment.
6	Chong et al. (2020)	Full-time teleworkers	120	Diary 10 Days (1 MP)	Organizational support	Conservation of resources (COR) theory	Higher (vs. lower) telework task support moderates the positive relation

							between end-of-day exhaustion and next-day work withdrawal behavior. Supervisors' expectations regarding smartphone availability in private hours moderate the link between off-work
7	Derks et al. (2015)	Full-time employees	100	Diary 4 Days (1 MP)	Social norm expectations	Boundary theory; Role model theory	smartphone use and daily work-home interference
8	Liu et al. (2015)	Chinese IT workers	125	Diary 3 Weeks (4 MP)	Perceived managerial family support	Social exchange theory (SET); Self-regulation perspective	Perceived managerial family support moderated the impact of morning family-to-work conflict on afternoon emotional exhaustion.
9	Rodríguez-Carvajal et al. (2019)	Spanish Full-time employees	122	Diary 5 Days (3 MP)	Servant leadership	Self-determination theory (SDT); Servant leadership theory	Servant leaders' behaviors leads to increased meaning in life and vitality, which in turn, lead to increased work goal attainment.
10	Stocker et al. (2014)	Swiss employees	139	Diary 5 Days (2 MP)	Appreciative Leadership	Stress-as-offense-to-self (SOS) theory; Effort-Reward imbalance	Daily appreciation by the supervisor leads to serenity at the end of workday. Appreciation by supervisors did not lead to well-being more strongly than appreciation from other sources.
11	Syrek and Antoni (2014)	German IT workers	135	Diary 5 Days (2 MP)	Leader performance expectations	Conservation of resources (COR) theory; Effort-Recovery theory (ERT)	Leader performance expectations moderates the relationship between unfinished tasks and both rumination and sleep (also over the weekend).

12	Wang et al. (2019)	Employees	58	Diary 10 Days (1 MP)	Interpersonal justice	Interpersonal justice; Recovery	Variability in interpersonal justice explained unique variance in psychological detachment beyond the average level of interpersonal justice. Perceived supervisor-related interpersonal justice leads to psychological detachment, which in turn leads to positive and negative affect.

Note. MP = Measurement points per day.

2.5.1. Theoretical Approaches

Table 3 summarizes the theoretical approaches identified in the reviewed papers. In the following, to answer the research question "Which investigated theoretical approaches and concepts can be identified in this particular field?", we describe the identified theoretical approaches for these three research streams (leadership, work-nonwork interface, EWB) to disentangle the complex theory development of this research stream.

Table 3

Theoretical Approaches Identified in the Screened Articles

Theories	Number of studies
Stressor/strain theories	17
Situational perspectives	10
Conservation of resources (COR) theory	4
Job demands–resources (JD-R) theory	2
Job Demand Control Model (JDC)	1
Work-Home Resources Model (WH-R)	1
Transactional Model of stress	1
Event system theory	1
Regulation perspectives	7
Effort-Recovery theory	2
Stressor-detachment model	1
General recovery theory	1
Stress-as-offense-to-self (SOS) theory	2
Self-regulation theory	1
Motivational theories	3
Self-determination theory (SDT)	3
Support theories	8
General organizational and supervisor support	4
Family supportive supervisor behavior	3
Managerial family support	1

Leadership theories	9
Transformational leadership	2
Appreciative leadership	2
Servant leadership	1
Abusive supervision	2
Punitive supervision	1
Leader consideration	1
Social theories	3
Social exchange theory	2
Social learning theory	1
Justice related theories	2
Effort-reward imbalance	1
Interpersonal justice	1
Role theories	2
Role conflict theory	1
Boundary theory	1
Affect-driven theories	2
Affective/emotional circumplex	2

Note. Number of theories do not coincide with number of articles, because several articles applied multiple theories. Specific leadership behaviors and social norm expectations were excluded for reasons of parsimony.

2.5.1.1. Leadership Theoretical Approaches. As for leadership frameworks, we broadly distinguished positive, negative, and absence leadership styles/behaviors/theories. 71% of the papers (n = 15) focused on positive leadership styles/behaviors/theories (i.e., leadership as a resource), and 24% (*n* = 5) investigated the influence of negative leadership styles/behaviors/theories (i.e., leadership as a demand). One paper investigated the influence of both positive and negative leadership behaviors. None of the papers considered absence leadership styles/behaviors/theories.

Positive leadership styles/behaviors/theories included general and more work-nonwork-related specific forms of support. Studies researching about general support included general organizational and supervisor support (*n* = 4). Research on more specific support analyses include perceived managerial family support (n = 1) or family supportive supervisor behavior (FSSB; Crain & Stevens, 2018; Hammer et al., 2009) (*n* = 3). Specific behaviors focused solely on relationship-related support (*n* = 2) and included meaningful communication (*n* = 1) and appreciative behaviors (*n* = 1). Additionally, health-related concepts of appreciative (*n* = 2) and servant (*n* = 1) leadership were applied. Transformational (*n* = 2) leadership was the only performance-based style.

Negative leadership styles/theories include relationship-related orientations such as abusive supervision (*n* = 2) and punitive supervision (*n* = 1). Specific negative leadership behaviors referred to leader's sleep devaluation, adverse performance expectations (*n* = 2), and shifts in interpersonal justice behaviors (*n* = 1).

Besides this, we observed a wide array of broader leadership-related theories used to describe the influence of leadership on EWB. This includes social theories (*n* = 3) such as social exchange theory (*n* = 2) (Cropanzano & Mitchell, 2005) and social learning theory (*n* = 1) (Bandura, 1977, 1985), justice related theories (*n* = 2) such as effort-reward imbalance (*n* = 1) (Siegrist, 2002) and interpersonal justice (*n* = 1) (Colquit et al., 2012), as well as the historical distinction between "initiating structure" versus "consideration" (Kelloway & Gilbert, 2017).

2.5.1.2. Work-nonwork Interface Theoretical Approaches. We distinguished approaches based on positive (*n* = 5) and negative (*n* = 16) spillover approaches (Beigi et al., 2019). Most papers identified in our review investigated forms of negative spillover. Negative spillover research studied broader (*n* = 14/16) and more narrow

forms of work-nonwork conflicts (*n* = 2/16). Reverse family-to-work conflict was only investigated by a single paper (Liu et al., 2015). Positive spillover was studied, e.g., in forms of optimized time allocation (n = 3) (Davis et al., 2015; Fan et al., 2019; Hornung et al., 2019) or positive affect spillover (n = 2) (Rodríguez-Carvajal et al., 2019; Stocker et al., 2014). Moreover, role theory-related approaches (*n* = 2) stemming from role conflict theory (Kahn et al., 1964) and boundary theory (Ashforth et al., 2000) were little used to explain negative and positive spillover processes. One paper did not specify a theory for spillover or recovery processes (e.g., Liu et al., 2021).

Regarding recovery processes, eight of the 21 papers included recovery-related constructs such as psychological detachment (e.g., Wang et al., 2019) or rumination (Syrek & Antoni, 2014) in their measurements. These studies applied process-based perspectives using the Effort Recovery theory (Meijman & Mulder, 1989) (*n* = 2), the stressor-detachment model (Sonnentag & Fritz, 2015) (*n* = 1), general recovery theory (Sonnentag et al., 2022), self-regulation theory (Baumeister & Vohs, 2003; Barnes, 2012) (*n* = 2), and stress-as-offense-to-self theory (Semmer et al., 2007) (*n* = 2) to include recovery processes in their EWB conceptualizations.

2.5.1.3. EWB Theoretical Approaches. Research on negative EWB (*n* = 10) is more recurring than positive EWB concepts (*n* = 7). Only four papers combined both negative and positive EWB indicators with respect to potential differences regarding positive and negative EWB processes.

Furthermore, research tends to focus more on affective wellbeing (*n* = 9) rather than on psychological wellbeing (*n* = 5) and seven papers studied a combination of affective and psychological wellbeing to account for the multifaceted nature of EWB. Research focusing on psychological wellbeing mainly uses work engagement as the most dominating positive indicator.

When affective elements were researched, studies used mainly negative indicators such as job-related depressive mood (Stocker et al., 2019) or anxiety (Cangiano et al., 2019), with very little research using positive indicators such as vitality (Rodríguez-Carvajal et al., 2019), happiness (Demerouti et al., 2013), or serenity (Stocker et al., 2014). The most recurring affective wellbeing indicator in work-nonwork interface research was emotional exhaustion (n = 5), another negative parameter.

Research focusing on job characteristics in forms of resources and demands was the most prevalent (*n* = 10), including conservation of resources theory (Hobfoll et al., 2018) (*n* = 4), job-demands resources theory (Demerouti et al., 2001) (*n* = 2), job demand control theory (Karasek, 1979) (*n* = 1), the Work-Home Resources model (ten Brummelhuis & Bakker, 2012) (*n* = 1), and the transactional stress theory (Lazarus & Folkman, 1984) (*n* = 1). In a similar way, a COVID-19 related paper applied event systems theory to focus on macro-contextual changes (Morgeson et al., 2015).

Aside from resource-demands perspectives, few motivational-related theories (*n* = 3) (Deci & Ryan, 1985) were applied. In two papers, self-determination theory was used to explain adverse effects of negative leadership on negative indicators such as ruminative thinking (Liang et al., 2018) and detachment (Cangiano et al., 2019). These examples suggest that abusive supervision impairs negative affective wellbeing, which results in negative spillover that impairs recovery processes. One paper (Rodríguez-Carvajal et al., 2019) used self-determination theory to highlight the beneficial effects of servant leadership on followers feeling of vitality through increased meaning in life throughout the day.

2.5.2. Researched Mechanisms in the Leadership-EWB Relationship

To answer the research question "What categories of mechanisms under study can be identified?", we distinguish studies based on bolstering/hampering mechanisms (predictor function) and buffering/strengthening (moderator function) mechanisms. Perhaps unsurprisingly, the detected leadership-EWB mechanisms are complex. Research that used leadership as a predictor is most prevalent (n = 11) followed by nine studies that modelled leadership as a moderator in stressor/strain relationships. Mediation mechanisms are clearly under researched: Only one study modelled positive leadership as a mediator of a multi-level intervention-EWB relationship but failed to show significant mediation effects (Moen et al., 2016).

In general, bolstering/hampering mechanisms (i.e., predictor function) have been investigated more frequently in intervention studies and field experiments with longer time periods (n = 7/9 category 1), whereas buffering/strengthening (i.e., moderator function) mechanisms were investigated predominantly in more dynamic time frames with within-subject designs (n = 7/12 category 2).

2.5.2.1 Investigated Bolstering/hampering Mechanisms. The bolstering/hampering mechanisms were predominating (n = 12) and papers mostly investigated some sort of positive leadership and thus bolstering mechanisms (n = 9). Only three of them researched negative leadership, i.e., hampering mechanisms.

Category 1, which centers on the longer-term studies, mainly followed the bolstering idea of leadership as a contextual macro-resource (n = 7) and used general leadership styles and forms of social support as well as more specific, nonetheless multidimensional, leadership behaviors. A clear distinction between relation-oriented and task-oriented forms of leadership support was not possible, since many papers theorized multiple pathways and included a mix of both forms of support in their

measures. However, a reoccurring central argument for the bolstering effect of leadership was that leaders may positively influence employees' work time flexibility (i.e., a resource) to either prevent negative spillover (Hornung et al., 2011; Munir et al., 2012;) or to boost positive spillover (Davis et al., 2015; Demerouti et al., 2013). Direct effects between positive leadership and EWB were inconclusive (Fan et al., 2019; Moen et al., 2016; Munir et al., 2012).

Category 2, which centers on the more dynamic studies (i.e., ESM studies), revealed more specific positive leadership behaviors such as appreciative leadership (Stocker et al., 2014) or upshifts in interpersonal justice behaviors (Wang et al., 2019) all focused on relationship-related leadership support containing elements of individual consideration. An example is the study of Stocker et al. (2014) showing that daily appreciation by the supervisor as a resource predicted positive affective wellbeing at the end of the workday, which was linked to important recovery processes such as energetic deactivation.

Regarding hampering mechanisms and the lesser researched negative leadership as a demand, only one longer term category 1 study showed that abusive supervision increased negative spillover and thereby negatively affected EWB. Specifically, somatic complaints elevated via increasing ruminative thinking off-work, suggesting that employees with abusive leaders fail to engage in needed recovery processes by replaying memories and prolonging detrimental social work experiences (Liang et al., 2018).

With regards to the more dynamic studies of category 2 (i.e., ESM studies), investigations of more specific negative leadership behaviors show that leadership can hamper EWB by affecting their sleep or recovery (Barnes et al., 2020; Wang et al.,

2019). For example, Barnes et al. (2020) found that leaders who do not prioritize their workers' sleep, subsequently affect their sleep quality on a daily basis.

In sum, the evidence of how positive leadership can bolster dynamic EWB outweighs the evidence of how negative leadership hampers dynamic EWB.

2.5.2.2. Investigated Buffering/strengthening Mechanisms. As mentioned before, the buffering/strengthening mechanisms were less researched (n = 9) than bolstering/hampering mechanisms. Studies researching the role of positive leadership for EWB predominated (n = 6) and only three of them studied negative leadership.

Regarding positive leadership, studies applying ESM with a more dynamic perspective (category 2) (n = 4/6) were more frequent compared to only two studies that adopted a multiple wave design (category 1).

The buffering mechanism occurs via both task and relationship-oriented leadership support (Chong et al., 2020; Liu et al., 2015; Liu et al., 2021; Stocker et al., 2019). However, some findings are insignificant (Blanco-Donoso et al., 2017; Breevaart & Bakker 2018).

As for less researched category 1 studies, the few available examples suggest that leadership as a resource can buffer stressor/strain relationships by communicating and increasing work meaningfulness (Liu et al., 2021) or by communicating appreciation (Stocker et al., 2019). For example, Stocker et al. (2019) showed in a two-wave study that the postulated job demand of job interruptions had no effect on job satisfaction, self-efficacy, job-related depressive mood, nor sleep problems when appreciation by supervisors was high, whereas these effects were significant when appreciation by the supervisor was low.

As for the predominating category 2 short term studies, two papers could show that positive leadership can buffer daily negative spillovers from work to nonwork (Chong et al., 2020), and vice versa (Liu et al., 2015). For example, Liu et al. (2015), could show that perceived managerial family support could buffer the effect of negative spillover from nonwork to work to emotional exhaustion later that day.

However, findings of this dynamic buffering effect of positive leadership are inconclusive, as some papers did not find the hypothesized relationships in this regard. E.g., Breevaart and Bakker (2018) could show on a sample with 271 elementary school teachers that the negative effect of daily role conflict on work engagement was only significant when daily transformational leadership was low (vs. high), but this moderating effect was not the case for daily family to work conflict on work engagement.

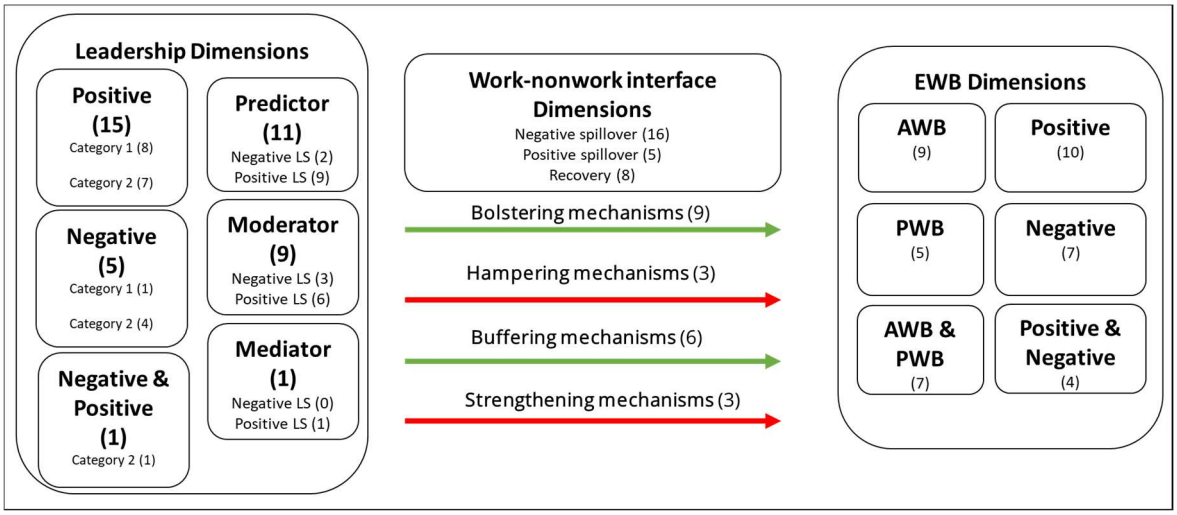
Regarding the few negative leadership studies (n = 3) following the strengthening mechanism, research suggests that negative leadership as a demand strengthens stressor/strain relationships via relationship-related negative leadership (Cangiano et al., 2019) and via negative role modelling leadership behavior (Derks et al., 2015; Syrek & Antoni, 2014).

For example, Cangiano et al. (2019) found that high levels of punitive supervision accentuated the psychological risks of daily proactive behavior on negative EWB (i.e., anxiety), which was associated with less daily detachment after work the same day. As for negative role modelling behaviors, e.g., Derks et al. (2015) showed that negative leadership may increase stable contextual demands by focusing on the increased blurred boundaries intensified using internet and communication technologies. Hypothesizing that daily smartphone use in the evening hours is more strongly related to negative daily spillover for employees who are expected (vs. not) to

stay online by their supervisor, they found indeed that an "always on"-culture set by the supervisor amplifies this detrimental relationship. Figure 2 provides an overview of examined leadership, work-nonwork interface, and EWB dimensions in the reviewed papers.

Figure 2

Overview of examined leadership, work-nonwork interface, EWB dimensions, and mechanisms in the reviewed papers



Note. LS = Leadership. EWB = Employee wellbeing. AWB = Affective wellbeing. PWB = Psychological wellbeing. Number in parentheses indicates number of identified papers.

2.5.3. Theoretical Issues

To answer the research question "which theoretical issues can be identified?", we observed several issues that are worth highlighting. Table 4 summarizes the identified theoretical and methodological issues.

Table 4

Theoretical and Methodological Issues Identified in the Screened Articles

Theoretical issues	**Methodological issues**
Issues regarding leadership approaches	
Negative leadership is under-researched and limited to active direct and indirect forms	Sampling: few heterogeneous samples, focus on working parents, predominance of IT and healthcare sector
Social-relational perspectives limited to account for indirect mechanisms via working conditions. Work-home resource model and JD-R-R model under-researched	Dependency on company constraints Use of financial incentives
Leader's indirect influence via shaping the psychosocial work environment conditions not sufficiently operationalized	Potential confounding effects: Multi-level interventions, use of compound scales
Too much use of broad leadership and support styles	
No support-spillover-fit/No differentiating between task-related and relationship-related support	
Recovery processes are insufficiently addressed	
Limited integration of the process perspective into the resource-demands perspective	
Issues regarding EWB approaches	
Limited use of affect-driven theories and focus on affective energy	

Positive psychology approach underdeveloped when focusing on spillover and recovery processes	
Issues regarding work-nonwork interface approaches	
Positive spillovers are under-researched. Fine-grained distinction of differential spillover processes is insufficient	
Issues regarding researched mechanisms in the LS-EWB relationship	
Lack of knowledge about hampering mechanisms. Task-related negative leadership under-researched	
Insufficient use of job resources and demands as mediators	
Influence of bolstering and hampering mechanisms for dynamic spillover and recovery processes unclear	
Inconclusive findings of buffering mechanisms	

2.5.3.1. Issues Regarding Leadership Approaches. We identified three main issues regarding theory development for leadership that are worth highlighting.

Firstly, research is unbalanced and focuses predominantly on positive leadership as a resource. Negative leadership is under-researched and limited to active direct and

indirect forms. Moreover, the influence of passive forms of negative leadership, i.e., its absence in form of laissez-faire or passive-avoidant leadership, on spillover, recovery, and EWB has not been researched yet longitudinally.

Secondly, we observed that social-relational frameworks such as social exchange or social learning theory that focus predominantly on the dyadic leader-follower interaction might be limited to explain indirect mechanisms via working conditions on spillover and recovery processes. To include specific resources and demands, rather the resource-demands perspective and related specific frameworks that account for the work-nonwork interface seem more suitable. However, the work-home resource model has only been used scarcely. Most notably, the job-demands-resources-recovery model (Kinnunen et al., 2011) has not been used in any of the investigated longitudinal papers, although it has recently been successfully applied in cross-sectional research (Dolce et al., 2020). Thus, we consider the limited use of mediators, and the limited integration of the process perspective into the resource-demands perspective a theoretical gap that warrants more process-based theory development and empirical testing.

Ultimately, the diverse number of applied leadership constructs, ranging in their breadth from broad styles to general and more specific forms of support, seem to complicate clear evidence synthesis. In other words, the use of broad multidimensional or general supervisor support constructs identified in some of the present studies are limited in their explanation regarding which specific leader behavior directly or indirectly affects spillover, recovery processes and EWB. More specific behaviors such as family-supportive supervisor behavior remain scarce, and single facets of broader concepts are also seldom used. The distinction of task- or relationship-oriented support is widely missing.

2.5.3.2. Issues Regarding EWB Approaches. As expected, the literature scoping review confirmed that the conceptualizations of EWB are too narrow and need to be expanded, and that recovery processes have been insufficiently addressed. In this regard, we detected two main theoretical gaps, which refer to the limited use of affect-driven theories and the lack of positive psychology approaches.

Specifically, while affect and affective spillover across the work-nonwork interface was the focal construct of many of the identified articles, only two papers (Stocker et al., 2014; Wang et al., 2019) included affect-driven theories such as the circumplex model of affect (Russell, 1980). For example, Wang et al.'s (2019) study used this theory to emphasize the importance of psychological energy activation for work and deactivation for recovery. This differs from broader resource-demands based theories that do not allow this nuanced view on different forms of personal energy. The limited use of such theories is problematic, as the role of affective energy, prolonged affective activation, and deactivation could be identified as a central theme in many of the reviewed studies.

Furthermore, motivational theories such as self-determination theory and linked psychological wellbeing constructs seem under-researched. In general, the positive psychology approach seems underdeveloped when focusing on spillover and recovery processes, while reducing work-nonwork conflict and associated emotional exhaustion seem to be of predominant relevance. In other words, whereas the buffering idea suggests that leaders might break negative spirals, not much is known about how leaders can onset positive spirals. Research building on prominent resource-based positive psychology theories such as the prominent broaden-and-build theory (Fredrickson, 2004) is missing here, which could shed light on the positive linkages between resources that need optimizing. This view is also echoed in conservation of

resources theory under the term of "resource caravan passageways" (Hobfoll et al., 2018, p. 107), and might be particularly interesting for a more resource-based approach for investigating spillover and recovery processes in the leadership-EWB relationship.

2.5.3.3. Issues Regarding Work-Nonwork Interface Approaches. Our scoping review has revealed that negative conflict-oriented studies are predominant, while positive spillovers are vastly under-researched. Thus, positive spillover needs further investigation and leadership-EWB research must be more dynamic if the above-mentioned positive spirals are to be properly identified. Moreover, a more fine-grained distinction of spillover processes is warranted, as leaders might influence different forms of spillovers in different task- or relationship-oriented supportive ways. For example, spillover processes may be based on time and energy resources (Geurts et al., 2005), or may be affective-based, instrumental-based, and value-based (Hanson et al., 2006), and a stronger alignment between specific leadership influence and specific spillover might result in stronger effects. Although the limited number of articles prevents us from drawing a robust picture of this hypothesized support-spillover-fit, the present research mapping indicates, e.g., that positive leadership can, on the one hand, preserve and increase time resources by providing task-related supportive leadership (e.g., in the form of increased work scheduling autonomy), and, on the other hand, preserve and increase energy resources through relationship-related support (e.g., appreciative behaviors, increase of experienced energy levels at work).

2.5.3.4. Issues Regarding Researched Mechanisms in the Leadership-EWB Relationship. We identified some theoretical gaps regarding the mechanisms that have been researched. Generally, the limited total number of articles highlights the need for more longitudinal research in this area. Furthermore, evidence of how positive leadership can bolster EWB by optimizing the work-nonwork interface of their

followers outweighs the evidence of how negative leadership hampers dynamic EWB; the latter needs more investigation. The few available studies suggest that negative leadership hampers recovery and EWB by role modelling adverse behaviors (sleep devaluation, unhealthy performance expectations) or through perceived interpersonal injustice which depletes personal energy resources and undermines recovery processes. However, not much is known about task-related negative leadership that would increase job demands. We also observed that many of the reviewed studies only theorized the influence of leadership on job resources and demands but did not include them as mediators and rather investigated more simple relations. Linked to this, although often theorized as a daily variable (for a related review see Kelemen et al., 2020), research has suggested both empirically (Breevaart & Zacher, 2019) and theoretically (Bakker & de Vries, 2021), that leadership may best be conceptualized as a rather stable contextual macro resource, or macro demand, respectively. As such, it has been suggested that a large portion of leadership's influence might indeed be exerted more indirectly through the leader's prominent agent role in shaping the psychosocial work environment conditions, influencing both other job resources and job demands (e.g., Berger et al., 2019; Schaufeli, 2015). Notably, boundary conditions for leadership apply here, depending on the leader's role capacity to change working conditions (Bakker & de Vries, 2021). For example, the reviewed rigorous multi-level intervention study by Moen et al. (2016) showed that increased work schedule control significantly reduced negative spillover and increased wellbeing, but that the changes in leadership behavior alone did not have this desired effect.

Additionally, both bolstering and hampering mechanisms need more dynamic investigations in the form of experience sampling method studies to address leader's influence on spillover and recovery processes via fluctuating demands and resources.

Ultimately, buffering mechanisms are inconclusive, which is why more coherent theory-based investigations are needed.

2.5.4. Methodological Issues

Before answering the research question "Which methodological issues and potential remedies can be identified?", it is worth noting that data quality of most of the retrieved studies was high, strengthening the importance of applying more rigorous research methods rather than cross-sectional designs. The GRADE rating resulted in almost perfect inter-rater agreement (Cohen's $\kappa = 0.809$) (Landis & Koch, 1977). Most of the studies yielded a high-quality rating (67 %; see Appendix B). Nonetheless, we detected some methodological issues and potential remedies surrounding the design, results, and external validity of the identified studies that are worth highlighting to guide future research. Note that this does not imply any general devaluation of any of the studies in question.

Regarding the design and external validity, we identified issues relating to the sampling and temporal order of the variables. That is, many studies centered their sampling around specific organizations (e.g., Danish elderly care organization; Munir et al., 2012) and sectors (e.g., IT sector; Fan et al., 2019), whereas other studies used a largely selective sample (e.g., only working parents in Japan with children under the age of six; Demerouti et al., 2013). Only a few studies applied heterogeneous samples which might be more representative (Cangiano et al., 2017; Derks et al., 2015; Stocker et al., 2014). Although sample specification can produce more robust evidence within the population under study (Barnes et al., 2020), it limits the generalizability of these studies to the wider population (Demerouti et al., 2013). Additionally, we found that most of the evidence stems from the IT sector ($n = 5$) or the medical staff sector ($n = 4$).

Related to this, company collaborations were an issue, as it requires considerable number of financial resources and makes research considerations dependent on company requests and practices rather than theoretical reasoning. For example, Liu et al. (2021) highlighted that their intervention study had to be switched from an initially planned 3-weeks timeframe to a 2-weeks timeframe as per the investigated hospital's request. Another issue may be that more sensitive topics may not be feasible to investigate as per company constraints. It is noteworthy that all studies that addressed negative leadership mobilized personal networks for sampling instead of engaging in company collaborations. Almost all the category 1 studies and few category 2 studies collaborated with specific companies to recruit their samples. However, it is important to note that close contact with HR departments during the design of the study may also be beneficial for several reasons. Firstly, possible leadership behaviors can be more accurately specified to the target population under study (e.g., Breevaart & Bakker, 2018), which is important for assessing potential reach of influence of the leader. Secondly, whereas time horizons might be shortened due to company constraints, the timepoints for daily data collection might be defined more accurately based on the actual working hours of the participating employees (e.g., Liu et al., 2015). Finally, especially for category 2 studies, company collaborations might make it easier to reach sufficient sample sizes, which is often an issue for intensive studies (Gabriel et al., 2019). The other nine ESM studies mobilized personal networks and broader university alumni networks to find suitable study participants.

Moreover, regarding financial incentives and external validity, in four cases, financial incentives were offered for participation. Although financial incentives may be particularly useful for raising the number of participants for ESM studies, such incentives may unintentionally affect data quality through the rise of arbitrary response

options to increase participant eligibility or unequal attractiveness of the incentive for different potential participant segments (Gabriel et al., 2019).

As for the results, some studies of category 1 reported potential confounding effects. That is, in some cases, leadership behavioral changes and its effects on EWB were part of multi-level interventions and its effects were not decomposed. In other words, it was not clear if the change in perceived leadership behavior or other actions around the intervention affected spillover, recovery, and EWB (e.g., Davis et al., 2015; Moen et al., 2016). In another case, report of p-values of significance was missing (Fan et al., 2019). Moreover, two studies applied measures that were not exclusively addressing leadership behavior. Specifically, Breevaart and Tims (2019) used a compound scale to measure social support from both colleagues and supervisors, and Chong et al. (2020) examined a construct called "telework task support", which should perhaps be conceptualized as an organization-wide resource.

In line with the methodological issues mentioned above, some potential remedies can be identified. To ease control of data quality, it was argued that the use of time-sampling might be more useful than event-sampling (Stocker et al., 2014), and electronic designs might outplay paper-pencil designs (Liu et al., 2015; Rodríguez-Carvajal et al., 2019; Stocker et al., 2014). Also, as there are many jobs where leadership interactions might not occur daily, leadership perceptions may be measured once in a baseline survey instead of including it in daily surveys (Barnes et al., 2020). Generally, frequency of interactions with supervisors should be controlled for in the sampling and/or analysis process (Liang et al., 2018; Rodríguez-Carvajal et al., 2019). Another important aspect is to assess focal variables at different timepoints to reduce the risk of inflating relationships based on mood-dependent memory and to generally overcome the endogeneity problem. For example, Derks et al. (2015) assessed all

variables at one measurement point, that is, at the end of a workday. Also, testing recovery processes at the end of the day, at a time when the recovery process itself should be taking place (e.g., Blanco-Donoso et al., 2017), might unintentionally affect the recovery experience itself and thereby data quality (Bolger & Laurenceau, 2013).

2.6. Discussion

Our scoping review contributes to the longitudinal leadership-EWB literature by providing a helpful overview of approaches, concepts, and mechanisms across the work-nonwork interface as well as over theoretical and methodological trends and issues to inform future research. We identified an increase in research interest on this topic over the past four years. In the following, we want to offer suggestions based on our findings to advance the field both theoretically and methodologically (Table 5).

Table 5

Theoretical and Methodological Suggestions for Future Research

Advancing theoretically	**Advancing methodologically**
Integrate multiple research streams (leadership, work-nonwork, EWB research Instead of relying on established "positive" leadership concepts that might have double-edged effects for spillover and recovery processes, focus on recovery-supportive leadership behaviors Focus on personal energy resources Focus more on affective-driven theories such as the circumplex model of affect to	Use the experience sampling method Be aware of potential pitfalls when engaging in company collaborations (atheoretical temporal lenses, limits of generalizability). Be aware of potential pitfalls when providing financial incentives and explore immaterial incentives. Use more inclusive samples beyond working parents and address other sectors than IT and healthcare.

address the multi-faceted concept of EWB and shifts in affective energy resources Investigate the role of passive or absent leadership Distinguish between task-related and relationship-related support Focus on bolstering mechanisms to detect other resources than work scheduling autonomy Apply an expanded leadership-JD-R-R model to frame leadership as macro-resource or demand Explore leaders influence on stable resources/demands and the interaction of stable and dynamic resources and demands (e.g. moderated moderations).	Model multilevel: Leadership behaviors or styles as an upper-level predictor or moderator to operationalize the idea of the leader as a contextual macro resource. Use theory-based temporal lenses Specify the instruments to assess leadership behavior (task-related or relational-related support) to avoid potential confounding effects. Embrace methodological complexity rather than aiming at simple relations.

2.6.1. Advancing Theoretically

We would like to offer some recommendations to advance the longitudinal leadership-EWB research theoretically.

To begin with, at this developmental stage of the research field, our findings reveal a clear need to integrate multiple research streams (leadership, work-nonwork, EWB research) to fully grasp the intricacies of the leadership-EWB relationship. In line with Inceoglu et al. (2018), we therefore argue that embracing a dynamic resource-demand-based process perspective with theoretical complexity will result in a deeper

understanding of how leaders influence sustainable EWB (Hofmans et al., 2021). As digitalization and flexibilization transformations will likely continue to blur the boundaries between work and nonwork and challenge vital recovery processes (Sonnentag et al., 2022), the way forward is to integrate work nonwork research into leadership-EWB research. Leadership can promote sustainable EWB (Di Fabio, 2017) only if spillover and recovery processes are adequately addressed. Related models such as the work-home resource model (ten Brummelhuis & Bakker, 2012) or the job-demands-resources-recovery model (Kinnunen et al., 2011) warrant more exploration for leadership.

Here, hitherto imagined "positive" leadership styles that are in essence performance-driven, need reevaluation, particularly since direct effects between positive leadership and EWB were inconclusive longitudinally (Fan et al., 2019; Moen et al., 2016; Munir et al., 2012). As such, we believe that merely approaching this topic from a broader "positive" leadership theory standpoint (e.g., transformational leadership) – which largely adopts a leadership effectiveness point of view – does not sufficiently explain the complex spillover and recovery mechanisms at play (Inceoglu et al., 2018). For example, while transformational leadership has been referred to as "energizer" (Schippers & Hogenes, 2011, p. 195), if the primary focus is on optimizing effort, but not on recovery, then this leadership style could overtax their followers' energy system and thereby detrimentally impact recovery processes (Quinn et al., 2012; Syrek & Antoni, 2014). The reviewed papers that linked positive leadership types to work engagement (Hornung et al., 2011; Breevaart & Bakker, 2018) and challenging demands (Breevaart & Bakker, 2018), and high-performance expectations that impair recovery (Derks et al., 2015; Syrek & Antoni, 2014), support this claim. Thus, instead of relying on established broad "positive" leadership concepts that might have double-

edged effects for spillover and recovery processes, we call for more research on more specific recovery-supportive leadership behaviors, which, e.g., support positive spillover processes and adequately balance employee's energy resources (Crain et al., 2018; Parker et al., 2021; Quinn et al., 2012).

In line with this, when focusing on employee's energy resources, we call for more precise conceptualizations of EWB and to investigate potential trade-offs between affective and psychological wellbeing effects of leadership (Taris & Schaufeli, 2015). To do so, our findings suggest that theory could be advanced by focusing more on affective-driven theories such as the circumplex model of affect (Russell, 1980) for several reasons. Firstly, the identified research papers that used this model (Stocker et al., 2019; Wang et al., 2019) could address spillover and recovery processes better by addressing employee's affective energy resources. Additionally, the model includes many facets of both affective and psychological wellbeing elements such as stress (= high negative arousal), motivation (= high positive arousal), serenity/relaxation (low positive arousal), or fatigue/exhaustion (= low negative arousal), and thereby allows for an improved definition of the favorable versus unfavorable processes. For example, in the short term, i.e., on a daily level, we might refer to optimal states of moderate to high active positive affect in the work domain (feeling energized, enthusiastic) and optimal states of moderate to low active positive affect in the nonwork domain (feeling serene, at ease). This process perspective integrates affect-based theories (Weiss & Cropanzano, 1996) with recovery theories (Meijman & Mulder, 1989) and facilitates the testing of unfavorable trade-offs between, e.g., energizing, and motivational effects of positive leadership during work on the one hand and, on the other hand, feeling relaxed and calm off-work. It also includes cognitive and biochemical elements and thereby integrates neuroscience into I/O psychology (e.g., Posner et al., 2005). This supports the use of

more objective and physical data collections, that have been called for by some of the reviewed studies (Barnes et al., 2020; Moen et al., 2012; Liang et al., 2018; Stocker et al., 2014).

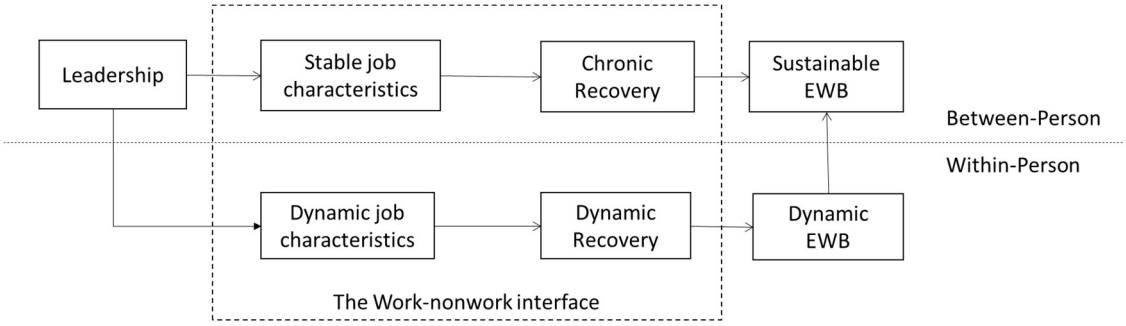
Additionally, we recommend applying a distinction between task- or relationship-oriented support (Yao et al., 2021). This distinction has been widely missing in the reviewed papers. Following this idea, researchers could differentiate better between bolstering/hampering versus buffering/strengthening mechanisms, and accordingly adopt differential views of leaders as preventers or interveners. Regarding the latter, our review has shown that while leadership is mostly investigated as a resource, spillover and recovery processes have mostly been addressed from a demands-based perspective. The related studies on buffering effects could show that leaders as resources can buffer stressor/strain relationships and thereby intervene in negative spillover and impaired recovery processes (Chong et al., 2020; Liu et al., 2015; Liu et al., 2021; Stocker et al., 2019). By applying the distinction here, relationship-related leadership support such as communicating appreciation or work meaningfulness could be more important for buffering, i.e., coping, and emotional regulation processes. Accordingly, specific relationship-related leadership support behaviors could be tested as moderating functions of stressor-strain mechanisms that spillover in the nonwork domain.

However, a positive psychology approach with a stronger focus on resources, positive spillover and recovery processes is needed to increase the understanding of leaders as preventers rather than interveners. As our findings suggest, leaders may bolster instrumental resources such as scheduling autonomy by managing workload, but less is known about how other contextual resources affect spillover and recovery processes positively. For example, leaders may also grant more decision authority

beyond scheduling autonomy (i.e., regarding where and how they work) to their followers (Fan et al., 2019). Moreover, leaders might increase personal development (e.g., Hornung et al., 2011) as well as personal energy resources (Breevaart & Bakker, 2018) and thereby positive work experiences (Fredrickson, 2004) that facilitate positive spillover and recovery processes. Therefore, regarding more preventive rather than intervening research following bolstering/hampering mechanisms, we recommend theorizing leadership as a stand-alone factor that influences job characteristics. This is also in line with previous research (Schaufeli, 2015; Berger et al., 2019). To theoretically frame the contextual influence of leadership within these processes, an expanded leadership-JD-R-R model may offer the most suitable approach, as it represents a resource-demands-based process perspective and as such transcends relational theories. In this regard, we suggest applying a between-person view for leadership constructs and stable job characteristics, and a within-person person view for more dynamic job characteristics (see Figure 3).

Figure 3

The Proposed Bolstering/hampering Mechanisms in the Leadership-JD-R-R Model



Moreover, as our review has shown, more research is warranted to investigate the influence of passive forms of negative leadership on employees' spillover and recovery processes and EWB. Although none of the reviewed papers investigated this form of leadership, previous research has shown that passive forms of negative

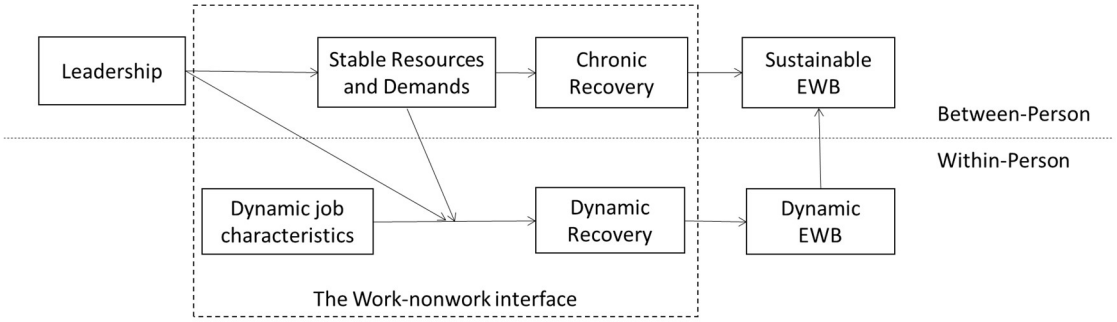
leadership are more prevalent than active forms (e.g., Aasland et al., 2010). Also, recent cross-sectional research suggests that it might be particularly harmful in remote work conditions (e.g., Wang et al., 2021). Passive leadership has been related to higher levels of job demands (Berger et al., 2019), and high level of job demands result in negative spillover and impaired recovery processes (e.g., Blanco-Donoso et al., 2017; Syrek & Antoni, 2014; Moen et al., 2016). It is therefore important for EWB preventive measures to increase knowledge about this particularly negative leadership style.

For research interested in investigating buffering/strengthening mechanisms, we recommend exploring differential moderating functions of leadership on prevalent job demand-strain functions (see Figure 4). Additionally, although not researched in the reviewed in papers, leaders might influence not only dynamic personal resources such as energy but also more stable key personal resources (e.g., optimism) that in turn influence job demand-strain functions (ten Brummelhuis & Bakker, 2012), and thereby act as a higher-order moderator. In this sense, personal characteristics of the employees might moderate the investigated mechanisms. Our review evidences that this interaction of stable and dynamic resources and demands at personal and contextual level warrants more investigation. Leaders may, for example, influence rather stable work conditions (e.g., by regulating individual decision authority, by setting norms for performance expectations, by establishing an “always on”-culture, etc.) which, in turn, interact either positively or negatively with more dynamic job characteristics (e.g., daily workload, daily scheduling autonomy) that are affecting spillover and recovery processes (Bakker & de Vries, 2021). Here again, we call for more fine-grained research that distinguishes theoretically between specific leadership support types (e.g., task- or relationship-related) rather than broad positive versus negative leadership styles and better theoretical alignment between these behaviors with different types of spillovers across

the work-nonwork interface (e.g., affective versus instrumental spillover; Hanson et al., 2006).

Figure 4

The Proposed Buffering/strengthening Mechanisms in the Leadership-JD-R-R Model



Finally, we encourage researchers to potentially expand the models presented here. For example, leaders' personal characteristics as well as their own contextual working conditions might also influence their exerted leadership (Berger et al., 2019), provoke so-called crossover effects, and thereby influence employee's work-nonwork interface (Nielsen & Taris, 2019). For example, Sonnentag and Schiffner's cross-sectional study (2018) revealed that leader recovery was related to employee recovery. They suggested that a shared environment, stressful or not stressful, might evoke the same reactions in two individuals. In turn, crossover effects from employee to leader that influence spillover and recovery processes are also possible (Nielsen & Taris, 2019), thus suggesting a more bidirectional rather than unidirectional leadership-EWB relationship. Future research may want to further explore and test these ideas in diary leader-follower dyads designs.

2.6.2. Advancing Methodologically

Generally, the strength of the experience sampling method to assess life as it is lived becomes apparent. Accordingly, we call for more experience sampling method

studies for this research field. Our review shows that diary studies are better suited to capture spillover and recovery processes, whereas longitudinal studies with longer time frames may be more suited for broader intervention studies but limited in addressing these dynamics. The most common occupational health theories including stressor/strain theories, regulation and affective theories imply a shorter dynamic temporal lens and within-person effects (Cham et al., 2021; Kelemen et al., 2020; Sonnentag et al., 2022). Yet, our identified methodological issues show that these study designs are complex and thus require careful consideration. For example, researchers should weigh the potential advantages of company collaborations regarding sample size and specification as well as knowledge about leaders' potential range of influence with the potential downsides of rather arbitrary and atheoretical temporal lenses and limits of generalizability. Electronic, time-sampling designs can assure that data entries fit the theorized lens. Also, rather than providing financial incentives for participation, immaterial incentives such as the provision of individual feedback may be explored to reduce the risk impoverished data quality (Gabriel et al., 2019). In any case, potential self-selection bias should be considered. As our review shows that most knowledge relates to work-family spillover and stems from the IT and healthcare sector, future research should use more inclusive samples beyond the ones typical for work-nonwork research (i.e., working parents with young children) and address other sectors.

Experience sampling methods seem to facilitate the alignment of theoretical complexity with feasible methods: modelling leadership behaviors or styles as an upper-level predictor or moderator in demand- or resource-based EWB processes in dynamic multi-level models seems the most appropriate modelling method to operationalize the idea of the leader as a contextual macro resource. We call for more inclusive research that selects theory-based temporal lenses. For example, regarding bolstering/hampering

mechanisms, specific or broader leadership behaviors may be measured temporally prior to the dynamic assessments to align method with theory. In contrast, regarding buffering/strengthening mechanisms, specific leadership behaviors may be assessed at the daily level. To avoid potential confounding effects, research should clearly specify the instruments to assess leadership behavior to rule out other social support, e.g., by co-workers, or other contextual effect changes. Clearly distinguishing between task-related and relation-related forms of support and investigating its differential effects would increase theory-method fit. Finally, we encourage future scholars to embrace methodological complexity and include the interaction of resources and demands rather than investigating only simple relations and aiming at the most parsimonious models (Hofmans et al., 2021) to increase theory-method fit (Vantilborgh et al., 2018). Methodological remedies and recommendations are available (see Bolger & Laurenceau, 2013; Ohly & Gochmann, 2017) and advancing (e.g., Gabriel et al., 2019), and this scoping review suggests that even studies with limited small sample sizes (e.g., Wang et al., 2019) can contribute significantly to the existing research body through presenting methodological rigor and interesting methods.

2.6.3. Practical Implications

Our study has revealed several practical implications. Firstly, with regards to EWB, we have demonstrated the importance of focusing on spillover and recovery processes for policy-makers and managers alike is demonstrated. Leaders should be aware that personal energy is finite and its short-term restoration crucial to sustain EWB. Secondly, it is evident that diverse leadership styles influence underlying processes differently. To facilitate recovery processes, leaders – or organizations – may provide instrumental support to their followers in the form of more decision authority relating to when, where, and how they work. To cope with demands, leaders should

provide relationship-related support via e.g., communicating meaningfulness or appreciation. Leaders should be aware that high performance expectations and energizing behaviors may backfire if the importance of necessary recovery-related boundaries are not communicated adequately. Negative leadership that undermines recovery processes by devaluing sleep or other related negative role modelling behaviors impair EWB. Also, leaders should be aware that the recovery processes of followers are heavily influenced fearing punitive actions or experiencing unjust treatment. For policymaking around EWB and leadership training and development, it is thus pivotal to address the work-nonwork interface and recovery-supportive leadership behaviors.

2.7. Limitations

As with other reviews, our current study has several limitations. Firstly, we examined only empirical published manuscripts. This limitation did not allow us to analyze unpublished studies from scholars and investigations presented at conferences. Secondly, we acknowledge that, although we applied the PRISMA-ScR and a transparent literature search strategy, other articles might relate to our research goal that we did not detect. This may be so because the concepts of EWB and work-nonwork interface are not yet sufficiently linked, which makes it difficult to clearly identify articles. For example, Kelemen et al.'s review (2020) on daily LS found 8 out of 74 articles before 2011, whereas we did not identify any of these studies as relevant for our research that focused particularly on spillover and recovery processes. However, Munn et al. (2018) stated that scoping reviews are particularly useful 'when clarification around a concept or theory is required' (p. 5), and our results aimed at targeting theory expansion and clarification of its complexity. Finally, this scoping review was an enormous undertaking, and our results are only up to date as of February 2021.

2.8. Conclusion

This scoping review is the first to organize the longitudinal evidence of an emerging research topic, that is, the role of spillover and recovery processes in the leadership-EWB relationship. The evolution towards increasingly blurred boundaries between work and nonwork and thus increased relevance of the work-nonwork interface has been insufficiently addressed by the leadership literature. Scoping the existing literature through an integrative resource-demands-based process perspective allowed for the much-needed expansion of the existing leadership-EWB relationship. To this end, we proceed to identify the various theoretical approaches and map evidence of two main mechanisms, i.e., bolstering/hampering mechanisms versus buffering/strengthening mechanisms, and highlight theoretical and methodological issues. In doing so, we hope to spur future exploration of the topic and redirect future research towards the most promising theoretical and methodological instruments, while providing practitioners and policymakers with ideas about how to address spillover and recovery processes in order to sustain EWB.

Chapter 3: Study 2 – Intensive Longitudinal Study

Note: This study addresses specific research objective 2: to study how leadership influences employees' work-nonwork interface and wellbeing in situ by means of an intensive longitudinal study.

Title: How Transformational Leadership Affects the Off-work Recovery of Daily Personal Energy Resources via Work Engagement: Resource and Demand-based Pathways

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3.1. Abstract

This study focuses on the transformational leadership-work engagement relationship and investigates resource and demand pathways for off-work recovery and employee wellbeing (EWB) on a day-to-day basis. While decades of leadership research have highlighted how transformational leaders can energize their employees to engage at work, recovery and stress research articulates that energy is a finite resource that requires daily restoration to sustain EWB. Yet, how the leader's energizing effect relates to employees' off-work recovery experiences on a day-to-day basis largely remains unknown, and both positive and adverse effects related to engagement are plausible. Following conservation of resources and broaden-and-build theory, we therefore theorize and test two pathways that relate the transformational leadership-work engagement relationship to employee off-work recovery: 1) A resource-based pathway via daily resource-building (role clarity), and 2) a demand-based pathway via increased challenging demands (workload). Utilizing a 10-day, two daily measurement points

design of 88 employees (n = 488), findings of a multilevel path analyses revealed that transformational leadership was positively associated with state work engagement, which led to 1) increased daily role clarity, positive spillover, recovery, and increased EWB the next day, but also to 2) increased daily workload and negative spillover, decreased recovery, and impaired EWB the next day. Assuming that one pathway effect might cannibalize the other, the main effect of transformational leadership on EWB was nonsignificant in the integrative model. Our findings highlight potential dark and bright sides of the transformational leadership-work engagement relationship regarding recovery, emphasizing the role of balancing personal energy on a day-to-day basis.

Keywords: Leadership, daily diary, job demands-resources-recovery, spillover, transformational, recovery

3.2. Introduction

A workday can be both energizing and depleting (Parker et al., 2021). How employees invest their personal energy resources at work (state work engagement) and restore them at the end of the workday (daily off-job recovery) is central to sustaining employee wellbeing (EWB) (Meijman & Mulder, 1998; Quinn et al., 2012). We hereby understand EWB as the way people experience feeling good and/or experience fulfillment and purpose during their workday on a day-to-day basis (Sonnentag, 2015). Sustaining EWB is an essential topic today for individuals, organizations, and societies alike (Diener et al., 2020; Madrid et al., 2014; UN Assembly, 2015).

Previous research has shown that leadership is an impactful social influence at work (Antonakis & Day, 2017; Schippers & Hogenes, 2011; Yukl, 2013). As such, leadership can either energize or de-energize people to engage in work-related tasks (Bakker & De Vries, 2021; Schippers & Hogenes, 2011), and is therefore thought to either bolster or hamper EWB. Correspondingly, one of the best researched leadership-

employee related relationships is arguably the positive one between transformational leadership and work engagement (Decuypere & Schaufeli, 2020; 2021). More specifically, a substantial body of cross-sectional research has shown that employees who work for transformational leaders feel more energized and engaged (Arnold, 2017), and use this positive energy to craft more resources to cope with their work tasks (Bakker et al., 2023). This research body suggests that transformational leadership bolsters work engagement, often understood as a facet of EWB (Decuypere & Schaufeli, 2020).

However, how this energizing effect relates to the subsequent off-job recovery, on a day-to-day basis, remains a black box. In fact, research on the relationship between leadership and employee recovery is scarce (Chan et al., 2022; Kelemen et al., 2020; Sonnentag et al., 2022). Moreover, necessary within-person studies are widely lacking (Sonnentag et al., 2022). Therefore, favorable, or unfavorable implications of transformational leadership's energizing effect for daily off-job recovery are still unclear. Given emerging discussions around potential "dark sides" of transformational leadership and work engagement related to the overconsumption of personal energy resources (Baethge et al., 2021; Syrek & Antoni, 2014; Stein et al., 2021), it is important to increase our understanding of these subsequent work-nonwork processes.

The main goal of this study was thus to extend previous research by integrating an energy-enriching (resource-based) and an energy-depleting (demand-based) pathway to highlight a potential double-edged sword effect of the transformational leadership-work engagement relationship on off-work recovery in a daily diary study design. The energy-enriching pathway is based on the circumplex model of affect (Russell, 1980) and Frederikson's broaden-and-build theory (2001) as popular positive psychology theories. Following these theories, we assume that transformational leaders' influence

on employees' state work engagement, a personal high-arousal affective energy resource, which relates to increased daily role clarity and thereby facilitates daily positive work-nonwork spillover and off-work recovery processes. In contrast, the energy-depleting pathway is based on conservation of resources theory (Hobfoll et al., 2018) and derivates such as the job demands-resources-recovery (JD-R-R) model (Kinnunen et al., 2011; Bennett et al., 2018), and the work-home resource model (ten Brummelhuis & Bakker, 2012). In line with these theories, we assume that transformational leaders' energizing effect could potentially overtax their followers' energy system (i.e., increase over-engagement), increase daily workload, negative work-nonwork spillover, and thereby detrimentally impact daily off-work recovery processes (Quinn et al., 2012). In total, the energy-enriching resource-based pathway would bolster EWB, whereas the energy-depleting demand-based pathway would hamper EWB the next day.

In doing so, this study makes five main contributions. Firstly, we add to the few daily diary research that focuses on leadership, work-nonwork spillover and off-work recovery (Bennett et al., 2018) to provide a more nuanced understanding of the transformational leadership-EWB relationship. In general, leadership research has been insufficiently integrated into work-nonwork research in general (Sonnentag et al., 2022) and specifically into recovery research (Chan et al., 2022).

Secondly, we extend the JD-R-R model by addressing leadership as a factor that influences state work engagement and thereby the perception of job demands and resources. In doing so, we add to the limited research that investigates work engagement as a predictor rather than outcome of job characteristics (Lesener et al., 2019).

Thirdly, building on affect-driven theories (Cropanzano et al., 2017) and the idea of finiteness of human energy resources (Quinn et al., 2012), we shed more light on the

role of balancing personal energy resources (state work engagement and subsequent off-job recovery) on a day-to-day basis.

Fourthly, we enrich the picture of transformational leadership and work engagement by the notion of potential "dark sides", emphasizing an adequate balance and boundary of energizing leader behaviors and engagement levels as well an awareness of potentially detrimental health effects.

Fifthly, by comparing both resource- as well as demands-based pathways, we contribute to the few dual-pathway research that finally aims to identify not only demands for work-nonwork processes, but also positive resource-enriching pathways.

3.2.1. The Central Role of Energy Resource Balancing for EWB

EWB can be understood as a multifaceted individual-level construct that can manifest in different ways, such as in emotions and affect, physical health, cognitive functioning, and social relationships (Arnold, 2017). However, according to Quinn et al. (2012), the central element of EWB is human energy. The psychological element of human energy, namely energetic activation (Quinn et al., 2012), may be measured best as emotional experiences in a two-dimensional space across the emotional affective circumplex (Crain et al., 2018; Russell, 1980), with one dimension representing the level of arousal (or activation) and the other dimension representing the valence (or positivity-negativity) of the emotion. In this sense, the psychological form of energy can be experienced through high arousal positive emotions, such as vigor, or its antithesis, emotional exhaustion (Crain et al., 2018). Energetic activation thus refers to people's perception that they are energized (Quinn et al., 2012). Emerging research fields and theories such as work nonwork research (Crain et al., 2018), conservation of resource theory (Hobfoll et al., 2018), effort-recovery theory (Meijman & Mulder, 1998), and burnout research (Maslach & Leiter, 2016) all emphasize the role of energy as a scarce

resource central to EWB that needs to be managed in a balanced and regenerative way, allowing for replenishment and recovery. From a temporal perspective, it is important to note that vacation-to-vacation recovery is not sufficient, as the effects of vacations vanish quickly (Sonnentag, 2003). Rather, daily recovery processes are crucial to maintain EWB (Sonnentag, 2003).

Despite its acknowledged importance, recent reports and research suggest that a proper balancing of personal energy is at significant risk, and that bolstering EWB and/or buffering illbeing is becoming increasingly difficult (Adecco, 2022; Gallup, 2021; Kniffin et al., 2021; Rudolph et al., 2020; Sonnentag et al., 2022). Reasons for this may be the accelerating flexibilization of work arrangements that has increased the permeability of boundaries between work and nonwork (McKinsey, 2021), which makes the occurrence of energy spillover effects from work to nonwork and impaired recovery processes more likely (Sonnentag et al., 2022). Indeed, a recent report shows that employees nowadays seem to have more trouble to recover from work (e.g., Adecco, 2022), i.e., to unwind and restore their resources after work (Sonnentag & Fritz, 2007), and a growing body of research shows that the difficulty of effectively restoring energy resources off-work largely affects EWB on a daily basis (Meijman & Mulder, 1989; Parker et al., 2021; Sonnentag et al., 2022). Recovery experiences were also considered as energy resources themselves (Halbesleben et al., 2014).

In this sense, on the one hand, personal energy as a positive affect state (feeling good and/or fulfilled) can be seen as EWB itself (Quinn et al., 2012). On the other hand, personal energy can also be referred to as a resource for EWB, as positive emotions have shown to be linked to other resources influencing EWB (Diener et al., 2020). In the present manuscript, we refer to both perspectives to show how different energy

levels experienced at work (state work engagement) and outside of work (off-job recovery) interact and ultimately affect EWB.

3.2.2. Transformational Leadership and its Effects on Daily EWB: The Resource-Based Pathway

We argue that transformational leadership can offset dynamic upward spirals, also known as "gain cycles" in job-demands resource theory (Bakker et al., 2023), that enrich daily personal energy resources and thereby bolster EWB. Resources can be broadly defined as "anything perceived by the individual to help attain his or her goals" (Halbesleben et al., 2014, p. 1338) and may be found at contextual or personal level (ten Brummelhuis & Bakker, 2012). Building on the resource-based pathway inherent to the JD-R-R model (Kinnunen et al., 2011), we understand transformational leadership as a rather stable contextual macro-resource that mobilizes daily personal energy resources (i.e., state work engagement), which increase daily contextual resources (i.e., daily role clarity), daily positive affective spillover and daily recovery experiences, and thereby ultimately promote EWB the next day in a serial mediation path.

Transformational leadership, the most researched positive leadership style (Antonakis, 2012; Decuypere & Schaufeli, 2020), is a multifaceted construct that aims at transforming employee's mindsets to spur work engagement and ultimately performance. Transformational leaders provide employees with idealized influence, individualized consideration, intellectual stimulation, and inspirational motivation (Bass, 1985). Previous research has shown that transformational leaders affect their employee's daily work engagement (Breevaart & Bakker, 2018) and positive emotions at work (Bono et al., 2007) directly, and it was proposed that they may do so via emotional contagion, social learning and/or social exchange processes (Decuypere & Schaufeli, 2020). Transformational leaders are therefore considered energizing, as they

mobilize employee's energy resources (Schippers & Hogenes, 2011). This is also in line with affective events theory (Cropanzano et al., 2017), that posits that employees' affective energy resources can be influenced by their leaders' behavior. As a macro-resource, transformational leadership is a rather stable resource that is unlikely to fluctuate daily (Breevaart & Zacher, 2019). This does not neglect the fact that leader-employee interactions may differ from day to day (Kelemen et al., 2020), but rather that variations in the perception of transformational leadership remain relatively stable over time (Bakker & De Vries, 2021).

Drawing on the frequently used broaden-and-build-theory (Frederikson, 2001), it is plausible that on days employees feel more engaged with their work, they use their positive momentary affective state to broaden their momentary thought-action repertoires to create other important resources to deal with their daily tasks. Although often considered as outcome rather than resource in itself (Kahn, 1990; Xanthopoulou et al., 2009), daily work engagement as a positive motivational-affective state (Macey & Schneider, 2008; Xanthopoulou et al., 2009) therefore represents an important personal energy resource for employees. In fact, research has shown that this energizing effect of being engaged at work builds not only other personal resources, such as self-efficacy (Salanova et al., 2006), but also increases contextual resources, such as role clarity (Nielsen et al., 2008; Xanthopoulou et al., 2009). This is also in line with the assumption of reciprocity inherent to the job-demands resources model (Bakker & Demerouti, 2014; Bakker et al., 2023; Lesener et al., 2019), which posits that work engagement enables self-initiated changes (job crafting techniques) and thereby crafts job resources. In this sense, we assume that role clarity is not only provided by the organization or by the supervisor, but rather developed bottom-up by the individual

employee through own's control and ability beliefs as well as proactive clarification measures (Bakker et al., 2023; Kauppila, 2014).

We focus on role clarity – employees' clear understanding of responsibilities and expectations (Kauppila, 2014) – because it is of particular importance for employees in the modern working world characterized by rather high levels of autonomy but that often lack a clear sense of tasks and performance expectations (Venz et al., 2018). Moreover, organizational health experts suggest that especially in contemporary uncertain times and virtual work settings, promoting role clarity is of paramount importance to sustain EWB (Kniffin et al., 2021). We assume that daily role clarity relates to daily positive affective spillover processes, because on days when tasks and expectations are clear, employees accomplish task goals better and make their work more enjoyable, which raises their affective mood (Rodríguez-Muñoz et al., 2014). While a meta-analysis showed that contextual resources generally improve recovery processes (Bennett et al., 2018), we argue that it is this effect of daily role clarity on positive affective spillover (being in a positive mood at the end of the workday) as a personal energy resource that facilitates daily recovery processes (Sonnentag & Binnewies, 2013). Similarly, we hypothesize that daily role clarity reduces the negative spillover effect of lack of energy or negative emotions which would impair daily recovery processes. This is also in line with ten Brummelhuis and Bakker's work-home resource model (2012), that argued that personal energy resources are the linking pin between work and nonwork domains. Daily recovery processes, in turn, are enabled through experiences of mastery, control, psychological detachment, and/or relaxation. These processes are fundamental to restore daily personal energy resource losses (Meijman & Mulder, 1989). In line with broaden-build theory (Frederikson, 2001), previous research has shown that positive affective spillover is positively linked to all of

these recovery experiences (e.g., Bennett et al., 2018; Fredrickson & Levenson 1998; Kempen et al., 2019)

We therefore propose that transformational leadership enriches daily personal energy resources and thereby bolsters EWB.

Hypothesis 1a: Transformational leadership predicts daily positive EWB via daily work engagement, daily role clarity, increased daily positive work-nonwork spillover, and daily recovery processes.

Hypothesis 1b: TFL predicts daily positive EWB via daily work engagement, daily role clarity, decreased daily negative work-nonwork spillover, and daily recovery processes.

3.2.3. Transformational Leadership and its Effects on Daily EWB: The Demands-Based Pathway

Moving away from the resource-based pathway and focusing on the hypothesized demands-based pathway, we also argue that the transformational leadership-work engagement relationship as a demand can offset demand-based downward spirals (Bakker et al., 2023) that deplete personal energy resources and thus affect daily off-job recovery and EWB adversely, and that these effects can coexist. Demands can broadly be defined as physical, emotional, social, or organizational aspects of the social context that require sustained psychophysiological effort (Demerouti et al., 2001). According to the challenge hindrance model (CHM; Podsakoff et al., 2023), demands can be categorized into challenging demands and hindrance demands. Typical challenging demands are workload and time pressure, whereas hindrance demands may be role conflict (Bennett et al., 2018), job insecurity, constraints, and interpersonal conflicts (Tadić et al., 2015). The distinction seems

relevant because challenge demands are, unlike hindrance demands, not solely perceived as stressful, personal resource-depleting, and impairing goal attainment, but also have positive effects on goal attainment and thus may boost personal resources, such as increased levels of energy, self-efficacy, and learning (Tadić et al., 2015). Following this, a meta-analysis (Crawford et al., 2010) showed that challenge demands are positively associated with work engagement. From a daily perspective, it therefore seems plausible to assume that employees might choose to work on the most challenging tasks when they feel particularly energetic, i.e., work engaged (Sonnentag, 2015). This favorable link with work engagement is arguably why demands have been differentiated into either positively challenging, or negatively hindering (Podsakoff et al., 2023). Indeed, this motivational element of challenging demands was also associated with higher positive affect (Tadić Vujčić et al., 2017).

However, the same meta-analysis found that both challenging and hindering demands are positively associated with burnout (Crawford et al., 2010), suggesting that all kinds of demands deplete personal energy resources. Moreover, recent research emerged that opened discussions around potential "dark sides" of transformational leadership and work engagement (Baethge et al., 2021; Bennett et al., 2018; Leiter & Maslach, 2009; Rantanen et al., 2013; Syrek & Antoni, 2014), which are strongly related to over-engagement and increased tackling of challenging demands. Related to this, a meta-analysis showed that work engagement shares considerable overlap with some workaholism dimensions, that are, working excessively and working compulsorily (Di Stefano & Gaudino, 2019). In sum, transformational leaders' energizing effect could potentially overtax their followers' energy system (i.e., increase over-engagement), increase daily challenging demands, and thereby detrimentally impact recovery processes (Quinn et al., 2012). From a dynamic recovery perspective, these

relationships between transformational leadership, work engagement, and challenging demands are particularly concerning, as meta-analytical evidence shows that challenging demands impair recovery processes even more than hindrance demands (Bennett et al., 2018). This would also question the favorable connotation of challenge demands as "positive events/conditions" (Podsakoff et al., 2023, p. 170).

We argue that high workload and related overload is of particular importance for negative spillover effects and impaired recovery processes (Nixon et al., 2011; Steed et al., 2021). Workload can be defined as the intensity or the extent of work assigned to an employee in a specific time frame (Inegbedion et al., 2020). We focus on this demand because nowadays, overload is "chronic and widespread" (Kelly & Moen, 2020a, p. 1), particularly in emerging remote work settings characterized by higher work intensification, working at high speed to meet tight deadlines, and overwork (Zappalà et al., 2022). Linked to this, research experts in the work-nonwork field suggested that overload is the root problem of impaired EWB and that flexibilization policies of work may rather cause than solve overload, if adequate workload management is not properly addressed (Kelly & Moen, 2020b). However, the recent research landscape shows inconsistent patterns of findings for daily within-individual variations of workload and relations to daily recovery experiences (Sonnentag et al., 2022). Whereas some studies found that on days with high workload individuals experienced less recovery (Chawla et al., 2020; Germeys & De Gieter 2017; Sonnentag & Fritz, 2007), others did not find such a relationship (Lanaj et al. 2021, Smit 2016). Also, positive relationships of high workload with positive affect and high energetic activation (Tadić Vujčić et al., 2017) appear to make a final conclusion difficult. We argue that although high workload might be accompanied by high energetic activation in the short term, negative spillover processes might be the linking pin between daily workload and daily recovery (ten

Brummelhuis & Bakker, 2012) and that on days when facing high workload, increased negative spillover processes, and decreased positive spillover respectively, impair recovery processes and decrease EWB. This is supported by previous research that has shown that on days when tackling challenge stressors, employees typically experience a higher level of activated negative affect during work (Ilies et al. 2007; Rodell & Judge, 2009), at the end of the workday (Story & Repetti, 2006; Zohar et al. 2003), and after work (Ilies et al. 2007).

We therefore propose that transformational leadership depletes personal energy resources and thereby impairs EWB.

Hypothesis 2a: Transformational leadership predicts daily negative EWB via increased state work engagement, increased daily workload, increased daily negative work-nonwork spillover, and decreased off-work recovery processes.

Hypothesis 2b: TFL predicts daily negative EWB via increased state work engagement, increased daily workload, decreased positive work-nonwork spillover, and decreased off-work recovery processes.

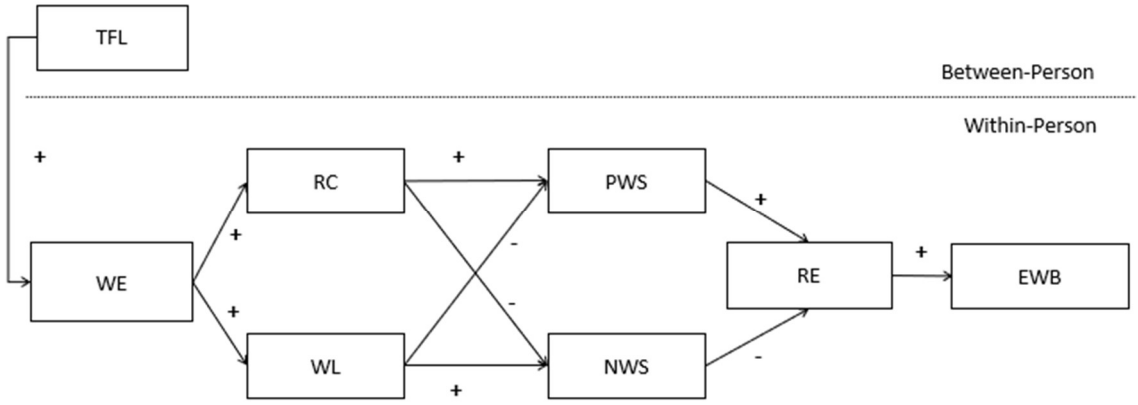
Finally, we assume that, due to the coexistence of both pathways, the main effect between transformational leadership and EWB is not significant. More specifically, we suggest that the dual-pathway nature cannibalizes potential positive (energy resource enriching) or negative (energy resource depleting) effects.

Hypothesis 3: The main effect between transformational leadership and EWB is not significant.

Figure 5 illustrates the hypothesized model.

Figure 5

Hypothesized Model



Note. TFL = Transformational leadership. WE = Daily work engagement. RC = daily role clarity. WL = daily workload. PWS = daily positive work-nonwork spillover. NWS = daily negative work-nonwork spillover. RE = daily recovery. EWB = Daily employee wellbeing.

3.3. Method

3.3.1. Sample

This study was approved by the Institutional Review Board (IRB00003099) (Appendix C). A quantitative interval-contingent daily diary study design (Ohly & Gochmann, 2017) was used to capture within-person effects over time, which is suitable to assess leadership-follower outcome mechanisms (Kelemen et al., 2020). An initial sample of 108 full-time employees in Spain was recruited via informal and professional networks of master students at the University of Barcelona in April 2021. Additionally, participants were recruited via advertising the study on LinkedIn, using the snowball sampling method (Biernacki & Waldorf, 1981). All questionnaires were implemented in and distributed through Qualtrics.

The announcement of the study including detailed information on study objective, data collection procedures, ethics, and data protection issues, along with an e-

mail assuring confidentiality and voluntary participation, was sent to all partners. No incentives were offered to participants to reduce potential rise of arbitrary response options that would affect data quality (Gabriel et al., 2019).

Data collection was administered in multiple phases. The invitation included an informed consent button that led participants to an initial baseline survey, which included sociodemographic variables as well as the measurement for transformational leadership. This baseline survey was filled in the week prior to day-level data collection. Informed consent was obtained from all individual participants included in the study.

Common diary study-related risks such as respondent fatigue, over disclosure and raised awareness of negative aspects (Bartlett & Milligan, 2015) were kept in mind when designing informed consent and the study methodology. For example, online survey completion of the daily measures took about five minutes not to compromise response rates and data quality and to mitigate the risk of respondent fatigue (Ohly & Gochmann, 2017). The individual survey links were sent twice daily, in the morning at 9am and at 7pm from Monday to Friday over two consecutive workweeks. We chose a two-week period, which is consistent with Reis and Wheeler's (1991) suggestion and recent recommendations (Gabriel et al., 2019) that two weeks represents a generalizable sample of individuals' lives. The links were configurated with an appropriate expiration date to ensure that only data entries at the same day are possible.

To ensure proximity to the individual's actual experience, work-related experiences were asked in the evening survey after work, and non-work-related aspects were asked the following morning. By combining retrospective reconstructing methods (Kahnemann et al., 2004) with state investigations in the morning survey, we not only reduced participants burden to answer on another timepoint (e.g., before going to bed), but we also assured that the entire potential recovery experience timeframe can be

evaluated by the individual. Previous diary studies asked about recovery processes at time points where these processes were supposed to be experienced (Blanco-Donoso et al., 2017), which not only does not capture the entire potential recovery timeframe but also risks impairing actual recovery experiences (Bolger & Laurenceau, 2013).

Before analyzing the data, we excluded data from participants who completed less than 30%, i.e., three or less daily workday questionnaires (see Barnes et al., 2020 for a similar procedure). Our final sample consisted of $N = 844$ observations (level 1) of $N = 88$ Spanish employees (level 2). On average, these participants filled out $M = 17.06$ ($Mdn = 18$) of the 20 daily questionnaires, with a minimum of seven filled out daily questionnaires. This sample size is similar to that of conventional diary studies published in top-tier journals (Gabriel et al., 2019). Most of the sample was female (75%), one person self-labelled as "other". Average age was $M = 31.7$ years ($SD = 8.9$ years) and ranged between 21 and 61 years. 92% of the participants worked from home for at least some time, while the remaining 8% worked from the employer's premises. As for parental and caring responsibilities, 13.6% had one dependent co-living child, 3.4% two dependent co-living children, and 5.7% self-defined as informal caregivers (i.e., people providing care at least on a weekly basis for older family members or people in their social network). 20.5% of the participants occupied managerial positions.

3.3.2. Measures

Appendix D lists all applied items. For most of the scales in use, validated versions in Spanish language already existed. To assess daily positive spillover and daily role clarity, we translated existing scales into Spanish following the guidelines of the International Test Commission (2017) for translating and adapting tests, including

forward and backward translation procedures in duplicate. All scales of the daily measures were adapted to the temporal diary design of the study (e.g., “Today,…”).

3.3.2.1. General Questionnaire. Stable measures related to transformational leadership were introduced by the following statement, "Please indicate to what extent the following statements apply to your direct supervisor (the person to whom you report directly and who supervises your work on a regular basis)."

We measured transformational leadership, based on the full range leadership model (Bass, 1985), using the Spanish version of the Human System Audit Short-Scale of transformational leadership which has shown to be unidimensional (Berger et al., 2011), since it is shorter than the Multifactor Leadership Questionnaire MLQ-5X-Short (Avolio & Bass, 2004) and an easy to apply instrument (Berger et al., 2011). The scale consists of eight items (e.g., “My leader promotes the use of intelligence as a means of overcoming obstacles”) that measure TFL using a five-point Likert scale ranging from *strongly agree* (1) to *strongly disagree* (5). Previous research has provided empirical evidence for the construct validity of this measure (Berger et al., 2011, 2012) in diverse languages. Cronbach’s alpha was .88.

As conceptualized before, the reason to operationalize transformational leadership as a stable trait-like measure is threefold: (1) the construct is originally conceptualized as a leadership style or profile variable that is stable within employees and therefore does not warrant a repeated measurement approach (Avolio & Bass, 2004), (2) existing literature posited leadership as a rather stable upper-level macro-variable that influences more volatile resources and demands (ten Brummelhuis & Bakker, 2012; Bakker & De Vries, 2021), (3) we assume this perception will not change over the course of two workweeks since most employees do not interact with their supervisor on a daily basis (Breevart & Zacher, 2019; Kacmar et al., 2003).

3.3.2.2. Daily Questionnaires. Participants could respond on a five-point Likert scale ranging from strongly agree (1) to strongly disagree (5). In the afternoon, daily workload was assessed by measuring three items for daily quantitative workload, based on the Spanish validated Psychosocial Factors Questionnaire 75 (PSF-75; Madrid et al., 2020). An example item for workload is "Today, I had to do a lot of things at work".

Daily role clarity was assessed with three items from Edwards et al. (2008) translated into Spanish. An example item is "Today, I knew how to go about getting my job done".

Daily work engagement was measured using three items from the Spanish Version of the Utrecht Work Engagement Scale (UWES) by Bakker and Schaufeli (2003). An example item is "Today, I felt full of energy at my work".

In the morning survey, participants were first asked to reflect on potential spillover processes and recovery process from the previous day. We used four items (one for each of the four recovery dimensions "psychological detachment", "relaxation", "mastery", "control") from the Spanish version of the state recovery scale (Bakker et al., 2015; Sanz-Vergel et al., 2010). One example item is "Yesterday, after my workday, I completely forgot about work." (Psychological detachment).

We assessed positive affect spillover from work to nonwork by using and translating three items from the Multidimensional Scale of Perceived Work-Family Positive Spillover developed by Hanson et al. (2006). One example item is "Yesterday being happy at work improved my mood at home".

We assessed negative spillover from work to nonwork by using three items from the Spanish validated version of the Survey Work/home Interaction Nijmegen (SWING;

Geurts et al., 2005; Romeo et al., 2014). One example item is “Yesterday, my work obligations made it difficult for me to feel relaxed at home”.

To assess EWB, we used three items for high-arousal positive affect (motivated, firm, enthusiastic) and three items for high-arousal negative affect (irritable, aggressive, nervous) from the Spanish validated version of PANAS by Lopez-Gomez et al. (2015).

It is rational to adopt a dynamic daily perspective when researching the present processes of interest for two main reasons. Firstly, all daily variables are thought to fluctuate on a day-to-day basis. Affective concepts such as state work engagement, daily spillover and daily EWB, as well as daily recovery are highly dynamic concepts at the within-person level (Sonnentag et al., 2022). Although the dynamic of role clarity has not been researched yet, extant diary studies have shown that not only personal, but also contextual demands such as role conflict and workload fluctuate considerably within individuals on a daily basis (Bakker & Xanthopoulou, 2009; Breevart & Bakker, 2018; Ouweneel et al., 2012; Sonnentag, 2003).

3.3.3. Data Analysis

As described in the sample description subsection, and common for daily diary studies (Gabriel et al., 2019), missingness (both monotonic and intermittent) is an issue in the current study. For that reason, using an imputation procedure for keeping the maximum information might be of practical utility. Amongst the different options to impute longitudinally, the so-called *Copy Mean* procedure was carried out given its proved efficiency over other alternatives (Genolini et al., 2013). To illustrate this imputation routine, let's suppose two individuals with missing observations in a three-wave design, individual 1 missed to answer in moment 3, whereas individual 2 only answered at occasions 1 and 2. The first case is an example of intermittent missing data, and the second example illustrates monotonic missing data type. Copy Mean procedure

carries out two types of data imputation techniques depending on the missingness kind (see Genolini et al. 2015, for further details). Specifically, when having intermittent missing data this procedure adds a variation in linear interpolated data ensuring thus that the average shape is kept in the imputed individual trajectory. Similarly, in the case of monotonic missing data, Last Occurrence Carried Forward procedure is slightly modified to keep average pattern in the individual trajectory.

Given the multilevel, nested structure of the data, we employed multilevel path analysis to test our hypotheses with the open-source packages lavaan in R (Rosseel, 2012). Leadership was included as upper-level predictor at between-person level, daily variables and processes at within-person level. We applied a two-level random effects analysis with maximum likelihood estimator for estimating the different effects of the path model.

3.4. Results

3.4.1. Descriptives and Reliability

The descriptive statistics including minimum, maximum, global mean scores and standard deviations are shown in Table 6. As can be seen, on average, the sample showed relatively high average levels of personal energy and contextual resources, with TFL (M = 2.09), WE (M = 2.32), RC (M = 1.89), PWS (M = 2.48), RE (M = 2.26), and PA (M = 2.39), compared to demands.

Table 6

Descriptive Statistics of Study Variables (N = 844 Observations at Level 1; N = 88 Persons at Level 2)

Variable	Min.	Max.	Mean	SD
TFL	1.00	4.25	2.09	0.69
WE	1.00	5.00	2.32	0.71
RC	1.00	4.00	1.89	0.62
WL	1.00	5.00	2.85	0.96
PWS	1.00	5.00	2.48	0.83
NWS	1.00	5.00	3.69	0.91
RE	1.00	5.00	2.26	0.75
PA	1.00	5.00	2.39	0.78
NA	1.33	5.00	4.11	0.77

Note. TFL = Transformational leadership. WE = Daily work engagement. RC = Daily role clarity. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect.

Table 7 and 8 show the correlations between study variables at between-person and within-person level respectively. Gender and age showed no significant correlations with any of the study variables. Accordingly, and not to over complexify the model, we chose to not enter gender nor age as variables in our models.

Table 7

Correlations at the Between-person Level of Study Variables (N = 844 Observations at Level 1; N = 88 Persons at Level 2)

Variable	Gender	Age	TFL	WE	WL	RC	PWS	NWS	RE	PA	NA
Gender	-										
Age	-.04[a]	-									
TFL	-.02 [a]	.15	-								
WE	-.02 [a]	-.02	.28**	-							
WL	-.06 [a]	-.04	.09	.06	-						
RC	-.18 [a]	.14	.22*	.39**	-.05	-					
PWS	-.19 [a]	.05	.38**	.63**	-.22*	.49**	-				
NWS	.03 [a]	-.09	-.15	-.30**	.62**	-.35**	-.55**	-			
RE	-.12 [a]	.10	.01	.31**	-.39**	.32**	.56**	-.69**	-		
PA	-.08 [a]	-.08	.25*	.77**	-.19	.50**	.71**	-.45**	.41**	-	
NA	-.01 [a]	-.02	.11	-.28**	.43**	-.23*	-.41**	.59**	-.54**	-.46**	-

Note. ** = Correlation is significant at the 0.01 level (2-tailed). * = Correlation is significant at the 0.05 level (2-tailed). [a] = Point-biserial correlation. TFL = Transformational leadership. WE = Daily work engagement. RC = Daily role clarity. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect.

Table 8

Correlations at the Within-person Level of Study Variables (N = 844 Observations at Level 1; N = 88 Persons at Level 2)

Variable	WE	WL	RC	PWS	NWS	RE	PA	NA
WE	-							
WL	.23**	-						
RC	.27**	.14**	-					
PWS	.05	-.12**	.05	-				
NWS	-.01	.05	-.04	-.37**	-			
RE	.08**	-.01	.03	.39**	-.46**	-		
PA	.15**	.01	.02	.30**	-.20**	.29**	-	
NA	-.09**	.00	-.04	-.28**	.23**	-.25**	-.41**	-

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed). TFL = Transformational leadership. WE = Daily work engagement. RC = Daily role clarity. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect.

Before testing the hypotheses, we examined the partitioning of variance in individual outcomes across levels. Moreover, we followed Bolger and Laurenceau (2013) and tested reliability by calculating the reliability measure R_C and longitudinal intra-class coefficients (ICC) of the daily measures. R_C assesses whether there are reliable within-person differences in change over time. For calculating the longitudinal ICC, the individual is the cluster in which multiple observations are grouped. It indicates the proportion of the total variance in the observed measures that is accounted for by the clustering. Based on these results, we can conclude that it is possible to

reliably distinguish people in terms of their patterns of change over time (Bolger & Laurenceau, 2013). As shown in Table 9, R_C ranged between .58 - .86, and longitudinal ICC ranged between .62 - .84. These results indicate that there were significant between- and within-person effects for each of the dependent variables, rendering it appropriate to employ multilevel modeling (Bolger & Laurenceau, 2013).

Table 9

Reliability Indicators for Daily Variables (N = 844 Observations at Level 1; N = 88 Persons at Level 2)

Daily variable	R_C	Longitudinal ICC
WE	.69	.78
WL	.83	.84
RC	.62	.75
RE	.58	.62
PWS	.86	.83
NWS	.77	.71
PA	.72	.77
NA	.67	.77

Note. WE = Daily work engagement. RC = Daily role clarity. RE = Daily recovery. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect.

3.4.2. Hypotheses Testing

Table 10 shows the results of the multilevel path modeling analyses including unstandardized coefficient estimates (*b*) with standard errors (SE), standardized coefficient estimates (β) and beta 95% confidence intervals for 10,000 bootstrap samples. Figure 6 illustrates the empirical multilevel path model.

Table 10

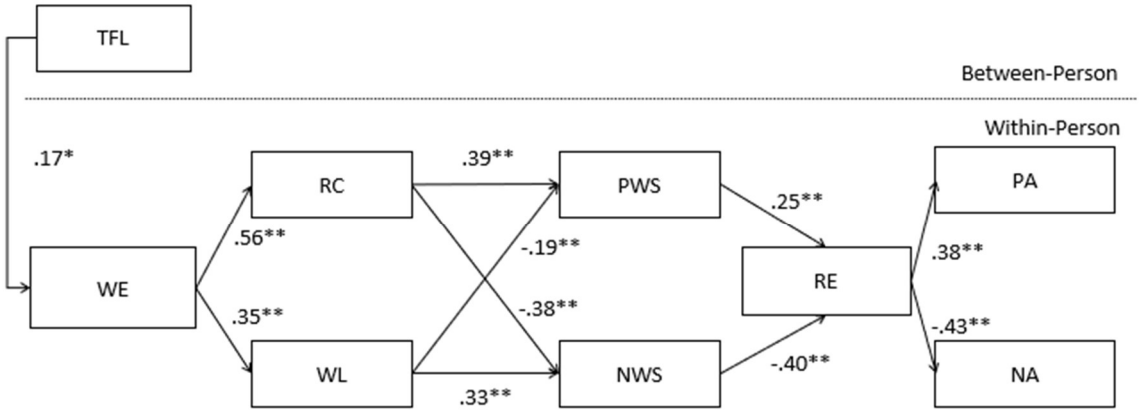
Results of the Multilevel Path Modeling Analyses Including Unstandardized Coefficient Estimates (b) With Standard Errors (b_SE), Standardized Coefficient Estimates (beta) and beta 95% Confidence Intervals

				beta 95% CI
Regression paths	*b*	*b_SE*	*beta*	[LL, UL]
TFL → WE	.17*	.08	.276	[.11., .20]
WE → RC	.56**	.05	.468	[.27, .60]
WE → WL	.35**	.08	.206	[.20, .61]
RC → PWS	.39**	.04	.294	[.37, .51]
WL → PWS	-.19**	.03	-.207	[-.21, -.11]
RC → NWS	-.38**	.04	-.276	[-.43, -.28]
WL → NWS	.33**	.03	.340	[.30, .41]
PWS → RE	.25**	.03	.285	[.19, .30]
NWS → RE	-.40**	.03	-.468	[-.41, -.29]
RE → PA	.38**	.03	.368	[.34, .44]
RE → NA	-.43**	.03	-.455	[-.47, -.36]
indPA	.004	.002	.004	[.00, .01]
indNA	-.002	.001	-.003	[.00, .00]

Note. N = 844 daily observations nested within 88 persons. * $p < 0.05$. ** $p < 0.01$. WE = Daily work engagement. RC = Daily role clarity. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect. indPA = Main effect of TFL on daily positive affect. indNA = Main effect of TFL on daily negative NA.

Figure 6

Results of Multilevel Path Modeling Analyses Predicting Employee Well-being



Note. N = 844 daily observations nested within 88 persons. * p < 0.05. ** p < 0.01. WE = Daily work engagement. RC = Daily role clarity. WL = Daily workload. PWS = Daily positive work-nonwork spillover. NWS = Daily negative work-nonwork spillover. RE = Daily recovery. PA = Daily positive affect. NA = Daily negative affect.

According to hypotheses H1a and H1b, transformational leadership predicts a positive personal energy path via daily work engagement, which predicts daily clarity, daily positive spillover, daily recovery, and ultimately daily EWB. As expected, transformational leadership increased daily work engagement (b = .17, p < 0.05, beta 95% CI = 0.11., 0.20). Daily work engagement predicted daily role clarity (b = .56, p < 0.01, beta 95% CI = 0.27, 0.60), daily role clarity predicted positive work-nonwork spillover (b = .39, p < 0.01, beta 95% CI = 0.20, 0.61) and daily negative work-nonwork spillover (b = -.38, p < 0.01, beta 95% CI = -0.43, -0.28), daily positive work-nonwork spillover predicted daily recovery (b = .25, p < 0.01, beta 95% CI = 0.19, 0.30), daily negative work-nonwork spillover predicted daily recovery (b = -.40, p < 0.01, beta 95% CI = -0.41, -0.29), and daily recovery predicted EWB (b = .38, p < 0.01, beta 95% CI = 0.34, 0.44 for positive affect, b = -.43, p < 0.01, beta 95% CI = -0.47, -0.36 for negative affect). This suggests that transformational leaders increase the work engagement of

their employees and that these, on a day-to-day basis, use this positive energy resource to craft role clarity, which leads to positive affect spillover and increases daily recovery. These processes lead to increased positive affect and decreased negative affect the next morning (i.e., EWB). Thus, H1a and H1b were supported.

According to hypotheses H2a and H2b, transformational leadership predicts a negative personal energy path via increased daily work engagement, increased daily workload, increased daily negative work-nonwork spillover, decreased daily recovery, and ultimately decreased EWB. Daily work engagement predicted daily workload ($b = .35$, $p < 0.01$, beta 95% CI = 0.20, 0.61), daily workload predicted negative work-nonwork spillover ($b = .33$, $p < 0.01$, beta 95% CI = 0.30, 0.41) and daily positive work-nonwork spillover ($b = -.16$, $p < 0.01$, beta 95% CI = -0.21, -0.11). Thus, H2a and H2b were also supported.

The main effect between transformational leadership and EWB was not significant ($p > 0.05$), thus hypothesis H3 was supported. When splitting the model according to the two pathways into two separate models, we could detect both a significant main effect between transformational leadership and positive EWB (i.e., $b = 0.004$, $p < 0.05$, for positive affect), as well as between transformational leadership and negative EWB (i.e., $b = -0.002$, $p < 0.05$).

3.5. Discussion

The main goal of the study was to show how the energizing effect of transformational leadership influences daily processes of balancing personal energy (state work engagement and subsequent off-job recovery), in both positive and negative ways. We hypothesized that transformational leadership mobilizes daily personal energy resource investments at work (i.e., state work engagement), which offset positive resource gain processes through self-initiated changes at work. These processes may

result in clear and pleasurable work experiences on a day-to-day basis, which spill over to the nonwork domain and facilitate necessary recovery experiences. This pathway facilitates a balancing of personal energy resources and thus bolsters EWB. We also hypothesized that the energizing effect of transformational leadership (i.e., the transformational leadership-work engagement relationship) might offset negative resource loss processes through overwork: Tackling higher daily workload might result in energy depletion and detrimentally influence the daily off-work recovery processes. This pathway might impede the necessary balancing of personal energy resources and thereby hamper EWB.

We tested these conjectures by using a two-week diary study with employees, so we could assess daily variations of EWB, personal and contextual resources at work, as well as spillover and recovery experiences. For both pathways, we found support in our analyses. Our results highlight substantial within-person variations of our variables (ICCs ranged between .62 and .84.), which could potentially be explained by the transformational leadership-work engagement relationship. Focusing on daily role clarity as a contextual resource that is highly relevant for current work contexts, it is worthy to highlight that, to our best knowledge, daily variations of role clarity have not been investigated yet, although our results show that these are substantial (ICC = 0.75). This is in line with extant diary studies which have shown that not only personal, but also contextual resources such as role conflict fluctuate considerably within individuals daily (Bakker & Xanthopoulou, 2009; Breevaart & Bakker, 2018; Ouweneel et al., 2012; Sonnentag, 2003). In line with Sonnentag' s study (2003), off-work recovery processes on the previous day influence daily EWB the next day.

Our results mostly align with previous research works. In line with established transformational leadership theory (Bass, 1985), previous reviews (Decuypere &

Schaufeli, 2021), and empirical findings (Breevaart & Bakker, 2018), transformational leadership as a contextual macro-resource predicted daily work engagement as a personal energy resource. This location of leadership at macro-level suggests that it might indeed be useful to consider leadership as a stand-alone factor in the JD-R-R model (Kinnunen et al., 2011), which shapes not only contextual but also personal resources and demands (Berger et al., 2019; Schaufeli, 2015). Thus, our results add to the existing assumption that transformational leaders may be called "energizers" (Schippers & Hogenes, 2011, p. 194) and affect work engagement, when seen as a volatile personal energy resource, directly.

Extending this, in line with the assumption of reciprocity between work engagement and job resources, and challenging job demands respectively (Bakker et al., 2023; Lesener et al., 2019; Xanthopoulou et al., 2009) our results show that daily work engagement affects both the crafting of daily resources and daily challenging demands. In line with broaden-build theory (Frederikson, 2001) and resource gain cycles (Bakker et al., 2023) daily work engagement predicted daily role clarity. Regarding hypotheses H1a and H1b, the findings regarding the daily role clarity-positive spillover-daily recovery relationship indicate that employees use their energy resources to engage in clarification measures of their role to make the workday more pleasurable. This in turn facilitates recovery processes after the workday, which affect EWB the next morning.

Yet, regarding hypotheses 2a and 2b, and adding to the detrimental effects of challenging demands on recovery discussed in previous research (Bennett et al., 2018; Kelly & Moen, 2020a), we also show that the transformational leadership-work engagement relationship predicts high levels of daily workload, which result in impaired daily recovery processes and thus impede a necessary balancing of personal energy resources. Following the CHM, we therefore demonstrate that tackling high

levels of daily workload, as opposed to moderate levels, rather represent hindrance instead of challenging demands (Podsakoff et al., 2023). This is in line with previous research that noted potential dark sides of the transformational leadership-work engagement relationship (e.g., Baethge et al., 2021; Di Stefano & Gaudino, 2019). The results indicate that work engagement might indeed be related to working excessively and thus, on a day-to-day basis, may be confounded with negative exploitative work-related behaviors related to workaholism (Di Stefano & Gaudino, 2019). Noteworthy, the regression coefficient 95% CIs of the daily work engagement-daily workload relationship and the one between daily work engagement and daily role clarity are similar.

Like previous research (Moen et al., 2016; Munir et al., 2012), and regarding hypothesis H3, we were unable to detect a main effect between transformational leadership and daily EWB when considering the two investigated pathways. The fact that splitting the integrative model into two separate models according to the hypothesized positive and negative pathways generated significant results for the relationship between transformational leadership and EWB indicates that the effect of one of the two pathways cannibalizes the effect of the other.

3.6. Theoretical and Practical Implications

Here, extending the JD-R-R model, we positioned positive leadership as a potential contextual macro resource, but also demand, that affects volatile resources and demands and thereby employees' daily recovery and EWB. Our findings regarding the role of spillover effects are in line with the propositions of the work-home resource model, which posit that is the personal energy resource, or lack thereof, that determines how work experiences affect recovery off-work (ten Brummelhuis & Bakker, 2012). Our findings related to the work engagement-role clarity and work engagement-

workload relationships are also consistent with the assumptions of reciprocity inherent to the job demands-resource model (Bakker et al., 2023; Lesener et al., 2019). Reciprocity means here that not only resources and demands predict work engagement, but also that work engagement predicts resources and demands vice versa. Moreover, our study adds insight to the link between state work engagement and challenging demands, as we show that this linkage might indeed overtax the personal energy system of the employees (Quinn et al., 2012).

We also bridge the gap between stress-related (i.e., demand-based) work nonwork and recovery research on the one hand and motivational-related (i.e., resource-based) transformational leadership research on the other hand. Notably, transformational leadership has been almost unanimously theorized as being beneficial for EWB, based on an overwhelming predominance of cross-sectional research (Arnold, 2017), or on evidence related to emotions expressed at work (Bono et al., 2007). Even more, despite scarce empirical evidence, it was argued that leaders that provide necessary resources would facilitate employees' recovery (Chan et al., 2022). However, transformational leadership focuses in essence on leadership effectiveness (Inceoglu et al., 2018), and therefore rather on optimizing performance and psychological wellbeing indicators that are closely related to performance, such as work engagement. Yet, our findings suggest that transformational leaders might also induce excessive work-behaviors related to over-engagement and workaholism, which impair important daily recovery processes and thus hamper EWB over time. We therefore hope to spark a theoretical debate about the trade-offs of energizing leadership behaviors regarding employee's recovery and EWB over time. Although we agree that work engagement is per definition not workaholism (Bakker et al., 2008), our energy-depleting pathway results indicate that the widely assessed work engagement scale (UWES) might indeed

also measure elements of over-engagement related to workaholism, as it related to daily workload. Additionally, reflecting on our findings, we echo the recent theorizing that work engagement might not be the antithesis of burnout (Maslach & Leiter, 2016), but that high levels of work engagement and related high-performance work behaviors may eventually turn into burnout through the overconsumption of personal energy (Bakker & De Vries, 2021; Leon et al., 2015). One explanatory factor of this shift might be the failed balancing and restoration of personal energy resources through recovery (Bennett et al., 2021; Sonnentag et al., 2021).

Practically, our findings suggest that transformational leaders should be aware that a sole motivational focus on energizing individuals at work may impair EWB over time. Adequate energizing leader behaviors/communications that do not lead to over-engagement are key. While moderate workload may be considered a positive stressor that may lead to accomplishment and personal development, excessive workload is not (Podsakoff et al., 2023). Therefore, managing adequate workload and bearing in mind individual recovery processes, both during and off-work, on a day-to-day-basis is essential. The transformational leadership element of individual consideration should address individual needs of personal energy restoration. Providing daily role clarity through work (re-)design measures, complementary to the here investigated bottom-up approach of crafting role clarity, may present a powerful resource to facilitate recovery processes. One final practical implication of this research could be human resource training and development interventions at both leader and employee level on how to balance personal energy resources and how to reduce negative spillover effects from work to nonwork. For example, leaders might learn about employee profiles that might be particularly prone to excessive work behaviors (Kossek et al., 2012; Parker et al., 2021) and how to engage in adequate energy-related role-modeling and

communications, whereas employees may learn new ways to create transition rituals and to separate work and nonwork domains.

3.7. Limitations and Future Research

One key limitation of the present research is the sole reliance on self-reported data, which raises the risk of common method bias. However, our use of a quantitative daily diary design over the course of two subsequent working weeks does mitigate this issue (Beal, 2015). Moreover, the person-centric approach and investigation of personal psychological energy constructs might justify the use of self-reports as the best possible data source (Bolger & Laurenceau, 2013). In any case, future research might include data from leader-follower dyads and/or more objective data of workload, such as electronic automated data of working hours. Also, objective data of physical arousal measured by a heart rate monitor on a fit-bit or similar wearables might provide further insight into how personal energy spills over from work to the nonwork domain in form of prolonged activation (Baethge et al., 2021).

Another limitation might be our restricted sample. Nonetheless, our sample size at the between-person level is with $N = 88$ higher than expert recommendations on multilevel analyses and indicates robust data quality (Gabriel et al., 2019). However, our data did not allow to distinguish between different occupational sectors. Additionally, the sample was unbalanced with 75% of the participants being female, as opposed to 47.1% of women in the Spanish labor force (World Bank, 2023). Future research should therefore replicate the findings with a more diverse sample size to ensure generalizability of the findings.

Moreover, a bigger sample size would have enabled more complex analyses, including potential moderating functions between work stress and recovery processes, which we were unable to conduct with the present data. For example, existing human

resource practices or key personal resources such as emotional intelligence might moderate the relationship between high workload and negative spillover (Bakker & De Vries, 2021; Bakker et al., 2023). Additionally, employee characteristics such as, e.g., high promotion focus, high intrinsic motivation, and high need for leadership, as well as organizational context such as high uncertainty might accentuate the transformational leadership-state work engagement relationship (Decuypere & Schaufeli, 2021).

3.8. Conclusion

This study showed that the energizing effect of transformational leadership leads to both favorable and unfavorable pathways for off-work recovery processes on a day-to-day basis. Favorably, employees might mobilize their personal energy resources to increase role clarity, which leads to pleasant workday experiences that facilitate positive spillover and off-work recovery processes. Unfavorably, employees might tackle higher workloads on days they feel particularly energized, leading to negative spillover and impaired off-work recovery processes. Off-work recovery processes on the previous day influence daily EWB the next day. In summary, these dark sides of the energizing transformational leadership influence require leader behaviors that focus on the adequate balancing of daily personal energy resource investment at work.

Chapter 4: General Discussion

Chapter 1 presented the general theoretical frame and introduced the vision and objectives of this research. Chapters 2 and 3 contain detailed discussions of the results obtained in each of the two single studies. This chapter 4 serves to link these results with the objectives of the research, to highlight main findings of the two conducted studies, and to contextualize these findings within the general theoretical frame. Strengths and theoretical contributions as well as limitations and recommendations for future research will be discussed.

4.1. Objectives of This Research

We completed the research presented here to find out how leaders influence employees' work-nonwork interface and EWB. Our vision of empowering leaders and organizations to adopt a more holistic approach to EWB by linking leadership to spillover and recovery processes across the work-nonwork interface and EWB followed the formulation of our general research objective: to examine the complex relationship between leadership and employees' work-nonwork interface regarding EWB. The deducted first specific research objective of this thesis project was thus to provide a map of the current related research. We reached this objective by conducting a systematic scoping review of 21 identified articles, providing answers to the following four questions: First, which investigated theoretical approaches and concepts can be identified in this particular field? Second, what categories of mechanisms under study can be identified? Third, which theoretical issues can be identified? Fourth, which methodological issues and potential remedies can be identified? This study built a sound theoretical and methodological foundation for the followed empirical study (Chapter 3). The second specific research objective was to investigate, based on our theoretical map of study 1, how positive leadership influences employees' work-nonwork interface and

wellbeing in situ by means of an intensive longitudinal study. We reached this objective by examining how perceived transformational leadership affects the off-work recovery of daily personal energy resources via daily work engagement, daily job demands and resources, and daily work-nonwork spillover processes. Providing empirical support for our hypothesized resource- and demand-based pathways, we advanced the knowledge for how energizing effects of positively-connotated leadership styles might offset double-edged sword effects regarding subsequent off-job recovery processes on a day-to-day basis. We can therefore conclude that the general objective and the two specific research objectives could be reached.

4.2. Key Outcomes of This Research

The project produced insights that are valuable with respect to the vision of a future where practitioners and researchers approach the topic of EWB in a more holistic and sustainable way. In the following, we briefly present three key outcomes. Firstly, considering the management of EWB an essential topic and increasingly demanding task, we hope that our thesis work could address this societal grand challenge by advancing theoretical, methodological, and practical knowledge (Kunisch et al., 2023). Particularly, we expanded the EWB concept holistically through a process-oriented and multilevel perspective. In doing so, generally, we learned that the current leadership-EWB research has backlogged important developments in EWB research regarding the integration of the work-nonwork interface (e.g., Crain et al., 2018; Diener et al., 2017) and specifically the roles of spillover and recovery (ten Brummelhuis & Bakker, 2012; Sonnentag et al., 2022). Considering the process perspective, we learned that processes at the work-nonwork interface represent the linking pin that explain how sustainable EWB (or chronic work-related illbeing) unfolds as outcomes of interrelated processes, and that it is therefore important to broaden up traditional, narrow to the work-domain,

and static conceptualizations of EWB. Considering the multilevel perspective, we also learned that individual EWB is influenced by various factors at different levels (Bakker et al., 2023; Nielsen et al., 2017), that these factors are related, and that systemic analytic theoretical frames are therefore suitable to address this issue (Inceoglu et al., 2021; Quijano et al, 2008).

Secondly, we also learned that there are different mechanisms at play that may explain how leadership influences employees' work-nonwork interface and EWB, which we grouped into two broad categories, namely bolstering/hampering mechanisms (i.e., leadership as a predictor) and buffering/strengthening mechanisms (i.e., leadership as a moderator). Building on this, the research presented here provided a new overall model for the investigation of leadership-EWB relationships that extended previously existing models: the expanded leadership-JD-R-R model.

In this vein, we found strong evidence indicating that direct supervisors – consciously minding potential power boundaries inherent to many supervisor roles (Bakker et al., 2023; Inceoglu et al., 2018; Teetzen et al., 2022) – can alter employees' work experiences. These work experiences in turn influence processes at the work-nonwork interface, reach into the nonwork domain, and are hence processual linked to EWB over time (Bennett et al., 2018; Kinnunen et al., 2011). Leaders therefore also influence employees' work-nonwork interface, including recovery processes in the nonwork domain. In the second study, we put the developed leadership-JD-R-R model to the test and investigated differential bolstering/hampering mechanisms in an intensive longitudinal study. In doing so, we could empirically show that performance-driven and "energizing" leadership styles such as transformational leadership might offset double-edged sword effects regarding off-job recovery processes. This may both bolster and hamper EWB over time. We thereby highlighted how daily personal energy

investment at work may lead to both, more daily role clarity but also more daily workload. The principal outcome of study 2 is therefore to provide evidence for the need to recalibrate "energizing" leadership behaviors and to consider the consequences of such motivational behaviors for employees' off-job recovery processes.

Thirdly, we provided methodological guidance future research can build on. We learned that daily diary designs with multiple measurement occasions are arguably most suitable to address the present research topic, as they allow multilevel analysis and different temporal dynamics of investigated processes. We learned that to increase theory-methodology fit, leadership and other more stable influencing factors could be measured more statically and at between-person level, whereas dynamic factors require placement at within-person level and need multiple daily measurement occasions. The systemic and therefore more holistic theoretical frames result in the need to embrace methodological complexity rather than aiming at simplicity. Lastly, more inclusive sampling procedures are needed to test external validity of the existing findings, so that results can provide more inclusive viable implications for the diverse workforce. The main findings of the two conducted studies will be discussed in more detail in the subsequent subchapters.

4.2.1 Main Findings of Study 1 – Scoping Review

The main objective of the first study, reported in chapter 2, consisted in enhancing our understanding of spillover and recovery processes within the leadership-EWB relationship by means of a systematic scoping review focusing on longitudinal studies. Four specific research questions arose from this main objective, related to 1) the identification of investigated theoretical approaches and concepts in this field; 2) the identification of categories of mechanisms under study; 3) the identification of

theoretical issues; and 4) the identification of methodological issues and potential remedies.

We completed the main objective of study 1 and found answers to all four research questions, since we identified a state-of-the-art map of the current research landscape and provided both theoretical and methodological guidance for future longitudinal research, including practical implications.

Theoretically, as this scoping review was the first of its kind, we closed respective research gaps and organized the longitudinal evidence on spillover and recovery processes in the leadership-EWB relationship. We thereby expanded the theoretical perspectives on the leadership-EWB relationship by integrating the pivotal concept of the work-nonwork interface. In line with a more contemporary, multi-level, and process-oriented perspective (Bakker et al., 2023; Bakker & de Vries, 2021; Inceoglu et al., 2021), we showed that leadership can promote sustainable EWB (Di Fabio, 2017) only if spillover and recovery processes are adequately addressed. We found that an integrated resource-demands based process perspective is useful when linking leadership to employees' work-nonwork interface and EWB, and that the integration of leadership, work-nonwork, and EWB research is necessary. The first main finding in this regard was that similar resource-demands based process perspectives (Bakker & de Vries, 2021; Kinnunen et al., 2011; ten Brummelhuis & Bakker, 2012) were scarcely used in the screened articles.

We systematically covered the evidence for bolstering/hampering mechanisms and buffering/strengthening mechanisms that define how leaders may influence employees' work-nonwork interface and EWB. In doing so, we highlighted differential views of leaders as either preventers or interveners regarding EWB and identified related research gaps. The second main finding was that leaders can influence spillover

and recovery processes by different resource- and demands-based pathways and are therefore able to reach the nonwork area. In doing so, leaders might influence resources and/or demands at personal and contextual level either in a favorable or unfavorable way. However, we showed that destructive leadership behaviors are under-researched and need more attention. Moreover, a principal third finding was that imagined "positive" leadership styles that are in essence performance-driven, need reevaluation regarding potential subsequent effects on off-job recovery processes. More specifically, the findings suggested two leadership-JD-R-R models that facilitate the testing of unfavorable trade-offs between, e.g., energizing, and motivational effects of positive leadership during work on the one hand and, on the other hand, feeling relaxed and calm after work. In this line, we found that more focus on the finiteness and dynamics of personal energy resources is needed. In this vein, affect-driven theories might provide a promising theoretical basis to embark from. We also found support to articulate recommendations regarding the application of a distinction between task- or relationship-oriented support (Yao et al., 2021), as the synthesized evidence of the screened articles suggested theoretical and practical utility of such as distinction. Linked to this, the fourth main finding was that it might be useful to theorize leadership as a stand-alone factor that influences job characteristics and subsequently the work-nonwork interface, as this relationship has been well-captured by existing research (Berger et al., 2019; Czakert & Berger, 2022; Teetzen et al., 2022).

Methodologically, the fifth main finding was that ESM studies are most suitable to capture dynamic spillover and recovery processes, and that they are warranted. In this line, we found that the choice of temporal lens needs more theoretical justification in such studies. Accordingly, to better align method with theory, we found that the distinction between stable and dynamic resources and demands, including leadership,

needs more methodological consideration when designing such studies. Ultimately, we identified an overrepresentation of two business sectors, namely the healthcare and the IT-sector, and a predominant and restrictive focus on working parents. Therefore, we found that more inclusive samples need to be addressed.

4.2.2. Main Findings of Study 2 – Intensive Longitudinal Study

Specific research objective 2 of this thesis was to study how leadership influences employees' work-nonwork interface and wellbeing in situ by means of an intensive longitudinal study.

More specifically and building on study 1 and identified research gaps, the main objective of the empirical study 2 was to highlight a potential double-edged sword effect of the transformational leadership-work engagement relationship on off-work recovery in a daily diary study design.

We therefore modelled and tested an energy-enriching (resource-based) and an energy-depleting (demand-based) pathway in an integrative, multi-level design. The multi-level design and the temporal sequencing fit our theory and the need to investigate EWB as a function of resources and demands at different levels, including spillover and recovery processes (Bakker et al., 2023; Inceoglu et al., 2021). More specifically, we tested relationships between the following variables: transformational leadership, daily work engagement, daily role clarity, daily workload, daily positive and negative spillover, daily recovery, and daily EWB.

The corresponding research gap consisted in the lack of knowledge regarding such processes that link energizing leadership behaviors to off-job recovery processes. Based on general theoretical support derived from the results of study 1 and based on specific theoretical support of previous research (e.g., Baethge et al., 2021; Decuypere

& Schaufeli, 2021; Maslach & Leiter, 2016; Stein et al., 2021), we hypothesized that on one hand, transformational leaders' influence on employees' state work engagement, which relates to increased daily role clarity and thereby facilitate daily positive work-nonwork spillover and off-work recovery processes (Fredrickson, 2001). On the other hand, we assumed that the same influence on state work engagement might also relate to daily workload, could potentially overtax their followers' energy system (i.e., increase over-engagement), increase daily workload, negative work-nonwork spillover, and thereby detrimentally impact daily off-work recovery processes (Maslach & Leiter, 2016; Quinn et al., 2012). In sum, we assumed that energy-enriching and EWB-bolstering processes as well as energy-depleting and EWB-hampering processes are at play.

The findings of empirical study 2 show that transformational leaders do influence employees' off-job recovery processes. In more detail, the first main finding was that transformational leaders can indeed be characterized as "energizers" (Schippers & Hogenes, 2011, p. 195), given their relationship with state work engagement. Employees that work with a transformational leader invest more personal energy resources to their work on a daily basis. Yet, this investment of personal energy resources has two sides, regarding EWB. On a positive note, and as a second main finding, we found that this investment is linked to daily contextual resources, such as daily role clarity, which clarifies work situations and makes the daily work experience more pleasurable: Daily role clarity is positively linked to positive spillover processes, and negatively linked to negative spillover processes. It was thereby positively linked to off-job recovery processes and ultimately EWB the next day. This finding reflects the idea that transformational leaders can offset positive "resource caravan passageways" (Hobfoll et al., 2018, p. 107) and therefore bolster EWB. Additionally, this finding

highlights the importance of daily role clarity for today's flexible and uncertain working conditions (Kniffin et al., 2021; Venz et al., 2018; Xanthopoulou et al., 2009) at a within-person level. It also emphasizes the role of work-nonwork spillover processes which link working conditions to off-job recovery processes (ten Brummelhuis & Bakker, 2012; Sonnentag & Binnewies, 2013).

In contrast, on the negative side, as a third main finding, we also found that daily over-investment of personal energy resources is possible (Quinn et al., 2012). This is represented in the positive link between state work engagement and daily workload, which in turn is related to negative spillover and negatively to off-job recovery processes, which ultimately hampers EWB the next day. This finding reflects the idea that transformational leaders might offset negative resource loss processes through overwork (Baethge et al., 2021; Czakert et al., 2022b; Di Stefano & Gaudino, 2019). As we found support for the existence of both pathways in parallel, another fourth main finding of this study is that transformational leaders need to bear in mind the potential impact of the energizing behaviors on employees' off-job recovery processes.

4.3. Implications for Theory

In summary, the findings imply that the work-nonwork interface plays an important role for the leadership-EWB relationship. The results of the present research thesis and existing research (e.g., Beigi et al., 2019) show that the work-nonwork interface is a valid construct, central for EWB. Particularly, spillover and recovery processes are relevant constructs and should be considered for a more holistic conceptualization of EWB. Given the increased blurriness of boundaries between the work and nonwork domains, we theoretically imply that the relative importance of EWB for people's overall wellbeing might be growing (Warr, 1999). Hence, in addition to the fundamental demand for more process-oriented theoretical frames for the

leadership-EWB relationship (Inceoglu et al., 2021), it might therefore be particularly necessary to address spillover and recovery processes when conceptualizing EWB. We therefore recommend avoiding too static and work-centric narrow conceptualizations of EWB that might not account for processes at the work-nonwork interface. Instead, we recommend expanding the EWB concept by use of the work-nonwork interface construct, as it helps researchers better to understand how EWB unfolds over time as a result of a more complex and holistic process.

Moreover, leadership and other work-related contextual factors are relevant constructs for recovery. Thus, work context matters when dealing with concepts that address "self-regulation"-related constructs in the nonwork domain, such as recovery. From a macro-level theoretical perspective, we therefore bridged the gap between effectiveness-oriented leadership research on the one side, and self-regulation-oriented recovery research on the other side. This implies that antecedents of adaptive or maladaptive self-regulation during nonwork that lie outside the influence range of the individual employee and rather within the organizational context need more attention in self-regulation-oriented theoretical frames. This also implies that research and theory related to the leadership-EWB relationship needs to overcome its limitations of focusing almost exclusively on work-related processes (Bakker & de Vries, 2021).

Specifically, this implies the need for an integration of constructs and theories, such as the job demands-resources-recovery model (Kinnunen et al., 2011). Building on this, in line with the principal premises of the HSA (Quijano et al., 2008), Lewin's force-field theory (Lewin, 1939), Katz and Kahn's social environment model (1978), and the idea of linking influencing factors of EWB at different levels together, we thereby related processes at organizational and psycho-social level with processes at individual and psychological level. On top of this, we highlighted the particular

relevance of leadership as the shaper of resources and demands at lower hierarchical levels (Berger et al, 2019; Schaufeli, 2015; Teetzen et al., 2022), denominating it as an upper-level resource or demand. Theoretically, this implies that leadership research located primarily at group level might overlook the various possibilities of many leaders to influence resources and demands at other levels, including factors at the organizational level.

Nonetheless, theory needs to advance to understand better the boundary conditions of leadership in terms of its capacity to shape working conditions. Clearly, leaders at different hierarchical levels have different capacities inherent to their roles to influence resources or demands at organizational level, including the capacity to engage in job (re-)design measures, changing climates, or developing and implementing EWB-favorable human resource practices (Bakker & de Vries, 2021; Bakker et al., 2023). Thus, to understand better which macro-contextual conditions might enable or deter recovery-supportive leadership behaviors is important. These macro-contextual conditions might be found not only at organizational level (e.g., norms, organizational culture, wellbeing at organizational level), but also extend to the societal level (e.g., norms, culture, economic conditions, etc.) (Inceoglu et al., 2021; Quijano et al., 2008). Theoretically, this implies that systemic approaches that go beyond organizational borders may be needed to understand leadership-EWB relationships.

Building on the above-mentioned, we found strong relevance of developing more theory regarding potential interactions between resources and demands at different levels (see also Lesener et al., 2019; Xanthopoulou et al., 2009). Differentiating between resources and demands at varying localities (personal versus contextual) is useful to understand the origins of the specific types of resources, that is, the individual or the social environment (Bakker et al., 2023). Yet, previous assumptions based on

comparing the intervention effects of increasing personal versus increasing contextual resources led scholars to the conclusion that work-nonwork interventions linked to EWB should target personal resources instead of contextual resources (von Allmen et al., 2023). Furthermore, they suggested that work-nonwork interventions that target the increase of personal resources would "not necessarily require involvement by supervisors" (von Allmen et al., 2023, p. 13). Our research challenges this assumption of resource independence at different levels and rather suggests close relationships. In study 2, we showed that leaders as contextual resource or demand influence personal resources (energy), and that this affects spillover and recovery processes subsequently. On a theoretical level, this adds more weight to the abovementioned implication that system approaches such as the one used in the HSA (Quijano et al., 2008) or as proposed in Bakker and De Vries' paper (2021) are needed to accurately explain interactions of psychological and psycho-social factors. This also implies that these system approaches need to be paired with an integrated resource-demands process perspective on EWB to understand how work-related and nonwork-related processes relevant to EWB interact over different time horizons.

Another theoretical implication that results from both present studies refers to the relevance of personal energy resources for future theory-building around the leadership-EWB relationship: Both the results of the scoping review and the empirical study showed how leaders can influence the personal energy resources of their employees, and how this relates to processes at the work-nonwork interface. We found that in line with previous research (Decuypere & Schaufeli, 2020; Schippers & Hogenes, 2011), leaders can influence personal energy resources and how they are invested at work (Bono et al., 2007). This implies that, in line with previous research propositions (Bakker & De Vries, 2021; Crain et al., 2018; ten Brummelhuis & Bakker,

2012), personal energy resources can be considered the linking pin between work-related processes and nonwork-related processes, making it highly relevant for spillover and recovery processes and the temporal evolution of EWB. Therefore, conceptual research needs to integrate affect-driven theories (e.g., Russell, 1980) in their theoretical frameworks instead of overly relying on leadership effectiveness approaches. Moreover, due to the finiteness of personal energy resources, purely resource-based motivational approaches and concepts should consider potential EWB-tradeoffs related to overtaxing personal energy systems (Baethge et al., 2021). Here, volatile constructs that represent intense personal energy investment, such as state work engagement, need more theoretical justification as to how they might relate to subsequent personal energy restoration (i.e., recovery). In essence, this implies that the role of time and dynamics of personal energy resources need more attention when laying the theoretical foundations of the leadership-EWB relationship.

4.4. Practical Implications

Several practical implications arise from this thesis project which might provoke actionable insights for policymakers, organizations, leaders, and employees. The main implication is that focusing on spillover and recovery processes is important for policymakers and managers to enhance EWB. Indeed, the topic of the work-nonwork interface is highly relevant for many current working life realities (Adecco, 2022; International Labor Organization, 2022; McKinsey, 2021; Sonnentag et al., 2022): Increasingly blurred boundaries are likely to grow the occurrence of spillover effects, both positive and negative ones. Similarly, more flexible work arrangements and internet and communication technologies are likely to further erode these boundaries between the work and nonwork domain, interrupting and hampering recovery processes (Sonnentag et al., 2022). Consequently, both occupational health practitioners and

organizational leaders should expand their views of EWB and adopt a more holistic perspective of total EWB, that transcends narrow work-related and static perspectives (see also Wells et al., 2023). Understanding EWB as a function of resources, demands, spillover and recovery processes helps practitioners to prevent and intervene in processes detrimental to EWB. It also helps to facilitate and maintain processes that foster sustainable EWB. Policymakers should address the work-nonwork interface and promote recovery-supportive leadership behaviors in EWB and leadership training and development. Given the notion of boundary conditions for leadership, organizations need to revise norms and organizational culture that may impact processes at the work-nonwork interface, and that may establish limits of leaders' capacities to influence in these processes. In small companies, managers may have the possibilities to influence rather stable working conditions such as the organizational culture or engage in job (re-)design processes, as they often represent employer and manager in one person. However, lower- to mid-level managers of bigger organizations with multiple hierarchy levels might not (Bakker & de Vries, 2021). Especially stable working conditions referring to granting employees individual decision authority (e.g., where and when to work), to setting norms for performance evaluations, or to the establishment of an "always on"-culture could be outside the scope of action of lower-level managers, and instead in the responsibility of HR and top management.

Various implications for leadership behaviors result. We provided multiple evidence for the claim that leadership is a relevant influencing factor for employees' work-nonwork interface, including off-job recovery processes. By retrieving, weighing, and pulling together existing longitudinal evidence, we showed that leaders have many opportunities to bolster EWB, strengthen other resource-EWB relationships, or buffer detrimental demand-based processes. Both studies imply that leaders should focus on

their employees' personal energy and mind its finiteness and need for short-term restoration. Study 2 implied in more detail that transformational leaders that aim to motivate and energize their employees should therefore address individual needs of personal energy restoration. Moreover, expecting high performance standards and executing energizing behaviors should be balanced with adequate communication practices about the importance of recovery-related boundaries to foster sustainable EWB. Additionally, leaders (or organizations) can provide instrumental support, such as granting decision authority over work-related aspects, to facilitate recovery processes. Considering buffering effects, relationship-related support behaviors such as communicating meaningfulness or appreciation can help employees cope with demands. To avoid impairment of EWB over time, leaders should consider the influence of punitive actions and unjust treatment not only on short-term emotional reactions but also on their followers' recovery processes. Moreover, exhibiting negative role modelling behaviors, for example in the form of devaluing sleep for the sake of work performance, impairs EWB.

Notably, practical implications not only for leaders but also for their employees arise. Employees need to ensure they are equipped with effective strategies that facilitate healthy processes at the work-nonwork interface, such as transition rituals and boundary management between work and nonwork domains (see also von Allmen et al., 2023). Also, our research results imply that excessive work behaviors come at cost to EWB over time, as they are related to negative spillover processes and hamper recovery processes. Following this, employees themselves need to safeguard their personal energy resources in order to sustain their wellbeing over time.

Finally, the found interactions of contextual and personal resources/demands call for a more holistic approach when designing work-nonwork interventions that target

EWB. Rather than focusing on either strengthening contextual resources through, e.g., job (re-)design initiatives or building and strengthening personal resources through, e.g., boundary management training, such interventions should address increasing both types of resources, while simultaneously reducing contextual demands (Moen et al., 2016).

4.5. Strengths of This Research

The first strength of this research is that it addressed a relevant topic (EU-OSHA, 2023; International Labor Organization, 2022) and built a bridge between different research disciplines (leadership research, EWB research, work-nonwork interface research). It therefore followed the call of management researchers to address societal grand challenges (Kunisch et al., 2023). Given the forecasted ongoing blurriness of boundaries between work and nonwork, increasing difficulties to manage the work-nonwork interface adequately, and the increasing role of recovery for EWB (Sonnentag et al., 2022), integrating work nonwork research into the leadership-EWB relationship is important to enhance the knowledge of this connection. Our integration of the three research disciplines in a research-guiding map is likely relevant for researchers of all three disciplines, as it facilitates a holistic expansion of existing models and provides empirical evidence.

The second strength is the clear focus on longitudinal research for the scoping review. The clear limitation of the scope of reviewed articles enabled a nuanced view on two categories of study designs: 1) long-term study designs, i.e., two or three wave designs, including group-randomized field trials, and 2) experience sampling method (ESM) designs such as daily diary studies. This differentiation resulted in recommendations to conduct ESM designs, as they capture spillover and recovery processes most accurately and are capable to model influencing stable and dynamic factors at different levels. Considering the temporal dimension of longitudinal studies

also enabled us to differentiate between research that focused on leaders as preventers and research that focused on leaders as interveners, including bolstering/hampering processes and buffering/strengthening mechanisms for EWB. Ultimately, it facilitated a dynamic process perspective on the issue and made methodological recommendations for longitudinal designs in this research area possible.

The third strength of this research is the intensive longitudinal design of the second study that empirically supports our established map. The multilevel design allowed to model leadership as a stable contextual macro-factor that influences daily processes at the within-person level. It therefore raised the theory-methodology fit (Vantilborgh et al., 2018) of the hypothesized theoretical model, which was often insufficient due to the predominant use of cross-sectional designs when investigating dynamic concepts that are thought to locate at within-person level.

Ultimately, this research also has practical relevance. It addressed key questions to strengthen the future research agenda in this field. The systematic review of evidence demonstrated the importance of spillover and recovery processes for EWB to policymakers and managers. It also facilitated relevant practical knowledge on task- and relationship-related leadership behaviors that may work favorably or unfavorably for sustained EWB. The longitudinal study furthermore provided empirical evidence for the practical relevance of off-job recovery processes and the antecedental role of "energizing" leadership behaviors.

4.6. Limitations

Some limitations apply to the present research project. The first set of limitations refers to the conducted scoping review, study 1. Particularly, they refer to the literature search, selection, and temporal scope of the review. Although the multi-step procedure

of subsequently adding search strings for constructs of leadership, EWB, and longitudinal designs was based on previous reviews (e.g., Beigi et al., 2019; Montano et al., 2017), the subsequent screening of titles and abstracts of the shortlisted papers might have resulted in an omission of potentially eligible articles.

Furthermore, although our literature search followed the PRISMA-ScR guidelines (Tricco et al., 2018), other articles relevant to our study objective might have not been detected because of the delimitating focus on published articles, which neglects potentially relevant conference papers and other unpublished articles. This might be an issue, since the scoping review was conducted until February 2021, during the pandemic of COVID-19, when many papers around EWB and the work-nonwork interface emerged. Additionally, the missing integration of the concepts of EWB and the work-nonwork interface, along with proliferation of related concepts, made it difficult to clearly identify articles. This set of limitation indicates that other articles might exist that we did not detect in our literature review. However, it is noteworthy that we tried to mitigate these limitations by several actions. Firstly, we applied the PRISMA-ScR and a transparent literature search strategy, including a standardized data abstraction form for the selection of articles, to ensure replicability of our article selection. Secondly, we screened the literature in duplicate to overcome potential rater bias. Ultimately, we applied a hand search of the reference lists and compared our final articles with previous reviews (Kelemen et al., 2020). Nevertheless, as our scoping review may serve as a precursor of more precise systematic reviews (Munn et al., 2018), we recommend future research to explore the option to conduct a systematic review that may quantitatively synthesize evidence regarding more precise bolstering/hampering mechanisms and buffering/strengthening mechanisms in the leadership-EWB relationship. Another idea would be to systematically review the leadership-employee

recovery relationship in more detail. Such as systematic review might also include cross-sectional studies, as the number of related longitudinal studies seems very small. As we found increased interest in the present research topic at bibliometric level, we assume furthermore that an update of our literature review might be warranted on a short- to medium-term horizon.

Another set of limitations refers to the conducted daily diary study, study 2. Theoretically, we were only able to put a fragment of our proposed models of the scoping review to the empirical test. Indeed, we were not able to test the buffering/strengthening mechanisms that theorized leaders as interveners, and therefore upper-level moderators, against illbeing and for EWB. We also did not include other leadership styles, such as passive or laissez-faire leadership style, which have been shown to be prevalent (Aasland et al., 2010) and particularly destructive in remote work conditions (e.g., Wang et al., 2021). This makes relative comparisons of leadership styles and relations with spillover processes, recovery processes, and EWB impossible. Future research could include such under-researched leadership styles and add to the scarce research on negative leadership.

Although temporal ordering of variables was done carefully and in line with theory, the study's nonexperimental character requires caution regarding any causal interpretations. Although perceptive psychological constructs that are thought to be dynamic might justify the use of self-reported data (Bolger & Laurenceau, 2013), future research might measure leadership constructs by use of leader-follower dyads to add comparisons and cross-validations of self- and other-perception regarding leadership behaviors. Moreover, the sole reliance on self-report data raises concerns about subjectivity, which might be overcome by use of objective physical data collections through, for example, wearables that measure physical arousal variations (Baethge et

al., 2021). Nonetheless, our standardized and duplicate translation procedures of the measurement instruments (see chapter 3.3.2.) and the rigorous reliability assessments (see chapter 3.4.1., table 9) suggest that the instruments show sufficient degrees of validity. Yet, by potentially building on bigger samples, future research might want to apply more systematic validation procedures of the measurements used in study 2.

Another limitation refers to the presence of missing data and respective exclusion of participants in study 2. Although missing data is a natural phenomenon in ESM designs (Gabriel et al., 2019) and although we applied copy mean imputation procedure after carefully comparing imputation procedure alternatives (Genolini et al., 2013), we cannot exclude the possibility that missing data has biased our estimates. Nevertheless, next to our dataset of participants who completed less than 30% of the daily questionnaires, we produced two alternative datasets with 40% and 50% of missing daily data entries and compared the reliability assessment scores of the measurement instruments. Comparing these reliability scores, we did not detect meaningful differences, which why we opted for the least restrictive exclusion option (Appendix E).

Although we targeted a more inclusive sample, a recommendation derived from the scoping review, the resulting heterogeneity of our sample might represent a limitation. For example, even though almost all of the participants worked at least sometimes remotely from home (n = 92%), the sample size did not allow us to compare effects for different subsamples, or to narrow our research focus down to employees working from home exclusively. Nevertheless, earlier research showed that leadership-EWB effect sizes seem to be similar across different work localities (Lundqvist et al., 2022). Moreover, heterogeneity among work schedules of participants might have influenced response times. We opted for an interval-contingent design because it was

recommended for the assessment of leader-follower outcomes (Ohly & Gochmann, 2017; Kelemen et al., 2020), and to ensure equal intervals between measurement occasions. However, when targeting the work-nonwork interface, future research might also consider the use of event-contingent sampling designs (Bolger & Laurenceau, 2013). For example, participants could be asked to fill out a daily questionnaire shortly before they start their daily work and as soon as they finish their daily work, instead of providing their self-reports at timely fixed measurement occasions. This might customize the study design to the individual participant situation, reduce retrospective bias or prolonging of data entries, and thereby raise data quality (Bolger & Laurenceau, 2013).

4.9. Future Research

As mentioned in the previous subchapter, future research could build on this work and overcome its limitations. Additionally, subsequent studies may use the theoretical and methodological orientation points of the conducted scoping review, summarized in table 5. Moreover, future scholars in this field could expand the developed theoretical models of study 1, as described in chapter 2.6.1., figures 3 and 4. For example, scholars might address the conditions for the occurrence of recovery-supportive leadership, that is, its macro-contextual and personal antecedents and interaction factors (Bakker & de Vries, 2021; Inceoglu et al., 2021). Replication studies related to our present study 2 could aim to replicate our findings with other samples and settings. For example, focusing on occupational health risk groups such as informal carers (Czakert et al., 2022a), or comparing samples from different settings – such as workers in fully remote settings versus workers in hybrid settings, or comparing workers from different national cultures (Czakert et al., 2022b) would enhance our understanding regarding the external validity of our empirical findings. Moreover,

future research might want to address sleep as a crucial recovery-related construct to examine how leaders' energizing effect affect sleep qualities (Berger et al., 2023b; Crain et al., 2018). This would also facilitate the use of more objective measurement instruments such as wearables that accurately measure sleep qualities and reduce the burden of self-reports of participants during nonwork time – a particularly important consideration when conducting intensive longitudinal studies on EWB that reach into the nonwork domain.

Chapter 5: General Conclusion

The work presented here continued the UB's research line dedicated to the investigation of leadership and EWB. The research also synergized with two international research projects funded by the Erasmus+-program of the European Union, which underlines its innovative character and practical relevance. To our knowledge, it was the first to investigate the particular roles of spillover and recovery processes, thereby including the work-nonwork area, in the leadership-EWB relationship. In doing so, this doctoral research addressed current and emerging challenges of fostering and sustaining EWB that are related to the interaction between work and nonwork processes. These challenges represent societal grand challenges and therefore affect stakeholders at different levels, ranging from individuals to organizations to society. By addressing these challenges, this thesis contributes to the advancement of the leadership-EWB research. Conceptually, the scoping review facilitated the integration of research streams (leadership, work-nonwork interface, EWB) and thereby followed the research trends to view EWB from a systemic, that is, multi-level and process-oriented, perspective. Based on a strong theoretical foundation, it introduced a resource-demands-based process perspective that allowed to uncover how leadership influences employees' work-nonwork interface and EWB. As a result, it advanced theoretical, methodological, and practical knowledge to address the promotion and maintenance of EWB. More specifically, the present thesis project was the first to provide systematic theoretical and methodological guidance for empirical related research and provided novel practical implications for policymakers, human resource practitioners, leaders, and employees (see Chapter 2: Study 1). It also identified relevant research gaps and provided a future research agenda. The resulting leadership-job-demands-resources-

recovery model expands existing theoretical frames and is a main conceptual contribution of this review work.

Empirically, the intensive longitudinal study was the first to investigate dual pathways linking transformational leadership to EWB via several constructs at within-person level: Daily work engagement, daily role clarity, daily workload, daily negative and positive spillover, and daily recovery (see Chapter 3: Study 2). Investigating the relationships between these constructs together and by use of an intensive longitudinal design provided support for our derived theoretical model from the scoping review. It thereby advanced our knowledge of possible recovery-supportive and recovery-hindering effects of transformational leadership. By that means, it highlights double-edged sword effects and challenges predominant assumptions of one of the most established and promoted leadership styles.

Safeguarding EWB is of prominent interest in the modern working world, and decades of research has revealed the relationship between leadership and EWB. Despite this, high work stress levels are concerning, and psycho-social risk factors are emerging at global level. On top of that, the ongoing flexibilization of work arrangements synergizes work and nonwork domains, raising the probability that employees illbeing or EWB reaches into the nonwork domain. Indeed, mastering a healthy work-nonwork interface seems pivotal but more challenging for many employees nowadays, which poses threats to the recovery from work efforts. Recovery is essential so that EWB can be sustained over time. Yet, not enough scientific knowledge of the role of leadership regarding employee's work-nonwork interface exists. Organizational psychologists are responsible for providing solutions for this issue to the public society, including human resource practitioners, organizations, leaders, and employees. To do so, more multi-level research need to be applied to explain the complex interaction between personal

and contextual influencing factors of EWB. Both factor categories, demands and resources, as well as their interactions and developments over time, need more research. To this end, more temporal designs need application. Leaders and organizations should consider EWB for ethical, legal, and business reasons and expand their approaches holistically. In this vein, it seems crucial to enhance our understanding and practical application of recovery-supportive leadership.

References

Aasland, M. S., Skogstad, A., Notelaers, G., Nielsen, M. B., & Einarsen, S. (2010), The Prevalence of Destructive Leadership Behaviour. *British Journal of Management*, *21*, 438-452. https://doi.org/10.1111/j.1467-8551.2009.00672.x

Adecco (2022). Disconnect to reconnect survey. Retrieved 26.01.2023 at https://www.adecco.si/wp-content/uploads/2022/08/ADO-Disconnect-To-Reconnect-Global-Report-07-2022.pdf

Allen, T. D. (2012). The work and family interface. In S. W. J. Kozlowski (Ed.), *The Oxford handbook of organizational psychology* (2nd ed., pp. 1163–1198). Oxford University Press.

Antonakis, J. (2012). Transformational and charismatic leadership. In J. Antonakis & D. V. Day, & (Eds.), *The nature of leadership* (pp. 256-88). SAGE Publications.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2014). Causality and endogeneity: Problems and solutions. In D. V. Day (Ed.), *The Oxford handbook of leadership and organizations (pp. 93–117)*. Oxford University Press.

Antonakis, J., Day, D.V. (2017). *The nature of leadership* (3rd ed., pp. 354-381). SAGE Publications.

Arksey, H., O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Arnold, K. A. (2017). Transformational leadership and employee psychological well-being: A review and directions for future research. *Journal of Occupational Health Psychology, 22*(3), 381–393. https://doi.org/10.1037/ocp0000062

Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a Day's Work: Boundaries and Micro Role Transitions. *Academy of Management Review*, *25*(3), 472–491. https://doi.org/10.5465/amr.2000.3363315

Avolio, B. J., Bass, B. M. (2004). *Multifactor Leadership Questionnaire. Manual and sampler set* (3rd edn). Mindgarden.

Baethge, A., Junker, N. M., & Rigotti, T. (2021). Does work engagement physiologically deplete? Results from a daily diary study. *Work & Stress*, *35*(3), 283–300. https://doi.org/10.1080/02678373.2020.1857466

Bakker, A. B. (2015). Towards a multilevel approach of employee well-being. *European Journal of Work and Organizational Psychology*, *24*(6), 839–843. https://doi.org/10.1080/1359432X.2015.1071423

Bakker, A. B., & de Vries, J. D. (2021). Job Demands–Resources theory and self-regulation: new explanations and remedies for job burnout. *Anxiety, Stress, & Coping*, *34*(1), 1–21. https://doi.org/10.1080/10615806.2020.1797695

Bakker, A. B., & Demerouti, E. (2007). The job demands−resources model: state of the art. *Journal of Managerial Psychology, 22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Bakker, A. B., & Demerouti, E. (2014). Job demands-resources theory. In P. Y. Chen & C. L. Cooper (Eds.), *Work and wellbeing* (pp. 37–64). Wiley Blackwell. https://doi.org/10.1002/9781118539415.wbwell019

Bakker, A. B., & Xanthopoulou, D. (2009). The crossover of daily work engagement: Test of an actor–partner interdependence model. *Journal of Applied Psychology*, 94(6), 1562–1571. https://doi.org/10.1037/a0017525

Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, *10*(1), 25–53. https://doi.org/10.1146/annurev-orgpsych-120920-053933

Bakker, A. B., Sanz-Vergel, A. I., Rodríguez-Muñoz, A., & Oerlemans, W. G. M. (2015). The state version of the recovery experience questionnaire: A multilevel confirmatory factor analysis. *European Journal of Work and Organizational Psychology*, *24*(3), 350–359. https://doi.org/10.1080/1359432X.2014.903242

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress, 22*(3), 187–200. https://doi.org/10.1080/02678370802393649

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1985). Model of causality in social learning theory. In S. Sukemune (Ed.), *Advances in social learning theory. Bandura in Japan*. Kaneko-Shoho.

Barnes, C. M. (2012). Working in our sleep: Sleep and self-regulation in organizations. *Organizational Psychology Review*, *2*(3), 234–257. https://doi.org/10.1177/2041386612450181

Barnes, C. M., Awtrey, E., Lucianetti, L., & Spreitzer, G. (2020). Leader sleep devaluation, employee sleep, and unethical behavior. *Sleep Health*, *6*(3), 411. https://doi.org/10.1016/j.sleh.2019.12.001

Bartlett, R., & Milligan, C. (2015). *What is diary method?* Bloomsbury Academic. Retrieved January 25, 2023, from http://dx.doi.org/10.5040/9781472572578

Bass, B. M. (1985). *Leadership and Performance Beyond Expectations*. Free Press.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology, 5*(4), 323–370. https://doi.org/10.1037/1089-2680.5.4.323

Baumeister, R. F., & Vohs, K. D. (2003). Self-regulation and the executive function of the self. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 197–217). The Guilford Press.

Beigi, M., Shirmohammadi, M. and Otaye-Ebede, L. (2019), Half a Century of Work–Nonwork Interface Research: A Review and Taxonomy of Terminologies. *Applied Psychology*, *68*, 449-478. https://doi.org/10.1111/apps.12168

Bennett, A. A., Bakker, A. B., Field, J. G. (2018). Recovery from work-related effort: a meta-analysis. *Journal of Organizational Behavior*, *39*, 262–75.

Berger, R., Czakert, J.P. (2022). Stress Management and Resilience Building. In Berger, R., Dalluege, CA., Franz, HW. (Eds.), *Organisational Excellence and Resilience. Management for Professionals*. Springer. https://doi.org/10.1007/978-3-030-85120-0_2

Berger, R., Czakert, J. P., Leuteritz, J.-P., & Leiva, D. (2019). How and When Do Leaders Influence Employees' Well-Being? Moderated Mediation Models for Job Demands and Resources. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2019.02788

Berger, R., Czakert, J.P., Pais, L., Scheibein, F., Wells, J., Rebelo dos Santos, N. (2023b, May 24-27). *The work-life-flow of Spanish and Portuguese employees: Preferences, sleep, recovery, and influencing factors* [Symposium presentation]. European Association of Work and Organizational Psychology, Katowice, Poland.

Berger, R., Dalluege, CA., Franz, HW. (2022). *Organisational Excellence and Resilience. Management for Professionals*. Springer.

Berger, R., Grau, I., Pais, L., Nogueira Ramos, P., Rebelo dos Santos, N., Scheibein, F., Wells, J., Czakert, J.P. (2023a, May 24-27). *Towards an integrative approach to work life flow and wellbeing: a systematic review of stable and dynamic influencing factors* [Poster presentation]. European Association of Work and Organizational Psychology, Katowice, Poland. https://research.ou.nl/ws/portalfiles/portal/63532532/26.05.2023.pdf

Berger, R., Romeo, M., Guardia, J., Yepes, M., and Soria, M. A. (2012). Psychometric properties of the spanish human system audit short-scale of transformational leadership. *Spanish Journal of Psychology*, *15*, 367–375. doi: 10.5209/revSJOP.2012.v15.n1.37343

Berger, R., Yepes, M., Gómez Benito, J., Quijano, S., & Brodbeck, F. C. (2011). Validity of the human system audit transformational leadership short scale (HSA-TFL) in four european countries. *Universitas Psychologica*, *10*, 657–668. https://doi.org/10.11144/Javeriana.upsy10-3.vhsa

Bernstein, E., Raffaelli, R., Margolis, J. (2014). *Leader-as-Architect: Alignment*. Harvard Business Publishing Education. Retrieved July 24, 2023, from

https://hbsp.harvard.edu/product/415039-PDF-ENG?activeTab=overview&itemFindingMethod=

Biernacki, P., & Waldorf, D. (1981). Snowball sampling—problems and techniques of chain referral sampling. *Sociological Methods & Research, 10*, 141-163. https://doi.org/10.1177/004912418101000205

Blanco-Donoso, L. M., Garrosa, E., Demerouti, E., & Moreno-Jiménez, B. (2017). Job resources and recovery experiences to face difficulties in emotion regulation at work: A diary study among nurses. *International Journal of Stress Management*, *24*(2), 107–134. https://doi.org/10.1037/str0000023

Bocean, C. G., Nicolescu, M. M., Cazacu, M., & Dumitriu, S. (2022). The Role of Social Responsibility and Ethics in Employees' Wellbeing. *International Journal of Environmental Research and Public Health, 19*(14), 8838. MDPI AG. Retrieved July 18,2023, from http://dx.doi.org/10.3390/ijerph19148838

Bolger, N., Laurenceau, J.-P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research*. Guilford Press.

Bono, J. E., Foldes, H. J., Vinson, G., & Muros, J. P. (2007). Workplace emotions: The role of supervision and leadership. *Journal of Applied Psychology, 92*, 1357–1367. http://dx.doi.org/10.1037/0021-9010.92.5.1357

Bowling, N.A., Eschleman, K.J., & Wang, Q. (2010), A meta-analytic examination of the relationship between job satisfaction and subjective well-being. *Journal of Occupational and Organizational Psychology*, *83*, 915-934. https://doi.org/10.1348/096317909X478557

Breevaart, K., & Tims, M. (2019). Crafting social resources on days when you are emotionally exhausted: The role of job insecurity. *Journal of Occupational and Organizational Psychology*, *92*(4), 806–824. https://doi.org/10.1111/joop.12261

Breevaart, K., Bakker, A. B. (2018). Daily job demands and employee work engagement: The role of daily transformational leadership behavior. *Journal of Occupational Health Psychology*, *23*(3), 338–349. https://doi.org/10.1037/ocp0000082

Breevaart, K., Zacher, H. (2019), Main and interactive effects of weekly transformational and laissez-faire leadership on followers' trust in the leader and leader effectiveness. *Journal of Occupational and Organizational Psychology*, *92*, 384-409. https://doi.org/10.1111/joop.12253

Callary, S.A., Solomon, L.B., Holubowycz, O. T., Campbell, D. G., Munn, Z., Howie, D. W. (2015). Wear of highly crosslinked polyethylene acetabular components. *Acta Orthopaedica*, *86*(2), 159–68.

Cangiano, F., Parker, S. K., & Yeo, G. B. (2019). Does daily proactivity affect wellbeing? The moderating role of punitive supervision. *Journal of Organizational Behavior*, *40*(1), 59–72. https://doi.org/10.1002/job.2321

Cham, B. S., Boeing, A. A., Wilson, M. D., Griffin, M. A., & Jorritsma, K. (2021). Endurance in extreme work environments. *Organizational Psychology Review*, *11*(4), 343–364. https://doi.org/10.1177/20413866211006441

Chan, P. H. H., Howard, J., Eva, N., & Tse, H. H. M. (2022). A systematic review of at-work recovery and a framework for future research. *Journal of Vocational Behavior*, *137*, 103747. https://doi.org/10.1016/j.jvb.2022.103747

Chawla, N., MacGowan, R. L., Gabriel, A. S., Podsakoff, N. P. (2020). Unplugging or staying connected? Examining the nature, antecedents, and consequences of profiles of daily recovery experiences. *Journal of Applied Psychology, 105*(1), 19–39. https://doi.org/10.1037/apl0000423

Chong, S., Huang, Y., & Chang, C.-H. (D.). (2020). Supporting interdependent telework employees: A moderated-mediation model linking daily COVID-19 task setbacks to next-day work withdrawal. *Journal of Applied Psychology, 105*(12), 1408–1422. https://doi.org/10.1037/apl0000843

Crain, T. L., & Stevens, S. C. (2018). Family-supportive supervisor behaviors: A review and recommendations for research and practice. *Journal of Organizational Behavior, 39*(7), 869–888. https://doi.org/10.1002/job.2320

Crain, T. L., Brossoit, R. M., & Fisher, G. G. (2018). Work, Nonwork, and Sleep (WNS): a Review and Conceptual Framework. *Journal of Business and Psychology, 33*, 675–697. https://doi.org/10.1007/s10869-017-9521-x

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology, 95*(5), 834–848. https://doi.org/10.1037/a0019364

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*(6), 874–900. https://doi.org/10.1177/0149206305279602

Cropanzano, R., Dasborough, M. T., & Weiss, H. M. (2017). Affective events and the development of leader-member exchange. *The Academy of Management Review, 42*(2), 233–258. https://doi.org/10.5465/amr.2014.0384

Czakert, J. P., & Berger, R. (2023). The Influence of Leadership on Employees' Work-nonwork Interface and Wellbeing: A Scoping Review. *Current Psychology*. https://doi.org/10.1007/s12144-023-04762-3

Czakert, J. P., & Berger, R. (2022). The Indirect Role of Passive-Avoidant and Transformational Leadership through Job and Team Level Stressors on Workplace Cyberbullying. *International Journal of Environmental Research and Public Health, 19*(23), 15984. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ijerph192315984

Czakert J. P., Pais L., dos Santos Rebelo N., Ramos P. N., Scheibein F., Wells J. S. G., Berger R. (2022a). Personal excellence based profiling to identify and apply tools and trainings for a better and sustainable work-life-flow. *EDULEARN22 Proceedings*, pp. 2365–2369. https://doi.org/10.21125/edulearn.2022.0613

Czakert, J. P., Reif, J. A. M., & Berger, R. (2022b). Leadership behavior, stress, and presenteeism: A cross-cultural comparison. In M. Klicperova-Baker & W. Friedlmeier (Eds.), *Xenophobia vs. Patriotism: Where is my Home?* Proceedings from the 25th Congress of the International Association for Cross-Cultural Psychology. Retrieved July 17, 2023, from https://scholarworks.gvsu.edu/iaccp_papers/293

Dalal, R. S. (2005). A Meta-Analysis of the Relationship Between Organizational Citizenship Behavior and Counterproductive Work Behavior. *Journal of Applied Psychology, 90*(6), 1241–1255. https://doi.org/10.1037/0021-9010.90.6.1241

Davis, K. D., Lawson, K. M., Almeida, D. M., Kelly, E. L., King, R. B., Hammer, L., Casper, L. M., Okechukwu, C. A., Hanson, G., & McHale, S. M. (2015).

Parents' Daily Time With Their Children: A Workplace Intervention. *Pediatrics, 135*(5), 875–882. https://doi.org/10.1542/peds.2014-2057

Davis, M.A. (2008). Understanding the relationship between mood and creativity: a meta-analysis. *Organizational Behavior and Human Decision Processes, 108*, 25–38. https://doi.org/10.1016/j.obhdp.2008.04.001

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer Science & Business Media. https://doi.org/10.1007/978-1-4899-2271-7

Decuypere, A., & Schaufeli, W. (2020). Leadership and work engagement: Exploring explanatory mechanisms. *German Journal of Human Resource Management: Zeitschrift für Personalforschung, 34*(1), 69–95. https://doi.org/10.1177/2397002219892197

Decuypere, A., & Schaufeli, W. (2021). Exploring the leadership–engagement nexus: A moderated meta-analysis and review of explaining mechanisms. *International Journal of Environmental Research and Public Health*, *18*(16), 8592. https://doi.org/10.3390/ijerph18168592

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

Demerouti, E., Shimazu, A., Bakker, A. B., Shimada, K., & Kawakami, N. (2013). Work-self balance: A longitudinal study on the effects of job demands and resources on personal functioning in Japanese working parents. *Work & Stress, 27*(3), 223–243. https://doi.org/10.1080/02678373.2013.812353

Derks, D., Duin, D., Tims, M., & Bakker, A. B. (2015). Smartphone use and work-home interference: The moderating role of social norms and employee work engagement. *Journal of Occupational & Organizational Psychology*, *88*(1), 155–177. https://doi.org/10.1111/joop.12083

Di Fabio, A. (2017). The psychology of sustainability and sustainable development for well-being in organizations. *Frontiers in Psychology*, 8, 1534. https://doi.org/10.3389/fpsyg.2017.01534

Di Stefano, G., & Gaudino, M. (2019). Workaholism and work engagement: how are they similar? How are they different? A systematic review and meta-analysis. *European Journal of Work and Organizational Psychology*, 28(3), 329–347. https://doi.org/10.1080/1359432X.2019.1590337

Diener, E., Emmons, R.A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology*, 47(5), pp. 1105-1117.

Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., & Oishi, S. (2017). Findings all psychologists should know from the new science on subjective well-being. *Canadian Psychology / Psychologie canadienne, 58*(2), 87–104. https://doi.org/10.1037/cap0000063

Diener, E., Thapa, S., & Tay, L. (2020). Positive emotions at work. *Annual Review of Organizational Psychology and Organizational Behavior*, *7*, 451–477. https://doi.org/10.1146/annurev-orgpsych-012119-044908

Dolce, V., Vayre, E., Molino, M., & Ghislieri, C. (2020). Far Away, So Close? The Role of Destructive Leadership in the Job Demands–Resources and Recovery Model in Emergency Telework. *Social Sciences*. https://doi.org/10.3390/socsci9110196

Edwards, J. A., Webster, S., Van Laar, D., & Easton, S. (2008). Psychometric analysis of the UK health and safety executive's management standards work-related stress Indicator tool. *Work & Stress*, *22*(2), 96–107. https://doi.org/10.1080/02678370802166599

Edwards, J. R., & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *The Academy of Management Review, 25*(1), 178–199. https://doi.org/10.2307/259269

European Agency for Safety and Health at Work (2022a). OSH Pulse - Occupational safety and health in post-pandemic workplaces. Retrieved December 19, 2022, from https://osha.europa.eu/en/facts-and-figures/osh-pulse-occupational-safety-and-health-post-pandemic-workplaces

European Agency for Safety and Health at Work (2022b). Managing psychosocial risks in European micro and small enterprises: Qualitative evidence from the Third European Survey of Enterprises on New and Emerging Risks (ESENER 2019). Retrieved December 19, 2022, from https://osha.europa.eu/en/publications/managing-psychosocial-risks-european-micro-and-small-enterprises-qualitative-evidence-third-european-survey-enterprises-new-and-emerging-risks-esener-2019

EU-OSHA (2023). Occupational safety and health in Europe: state and trends 2023. Retrieved July 18, 2023, from https://osha.europa.eu/en/publications/occupational-safety-and-health-europe-state-and-trends-2023

Fan, W., Moen, P., Kelly, E. L., Hammer, L. B., & Berkman, L. F. (2019). Job strain, time strain, and well-being: A longitudinal, person-centered approach in two

industries. *Journal of Vocational Behavior*, *110*(Pt A), 102–116. https://doi.org/10.1016/j.jvb.2018.10.017

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions. *American Psychologist, 56*(3):218–26.

Fredrickson B. L., Levenson R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition and Emotion, 12*(2), 191–220. https://doi.org/10.1080/026999398379718

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. Philosophical transactions of the Royal Society of London. Series B. *Biological sciences*, 359(1449), 1367–1378. https://doi.org/10.1098/rstb.2004.1512

Gabriel, A. S., Podsakoff, N. P., Beal, D. J., Scott, B. A., Sonnentag, S., Trougakos, J. P., & Butts, M. M. (2019). Experience Sampling Methods: A Discussion of Critical Trends and Considerations for Scholarly Advancement. *Organizational Research Methods*, *22*(4), 969–1006. https://doi.org/10.1177/1094428118802626

Gallup (2023). *State of the Global Workplace 2023 Report*. Retrieved July 18, 2023, from https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx

Gallup (December 3, 2021). The next global pandemic: Mental health. Retrieved January 26, 2023, from https://www.gallup.com/workplace/357710/next-global-pandemic-mental-

health.aspx#:~:text=Globally%2C%20seven%20in%2010%20people,and%20%22deaths%20of%20despair.%22

Genolini, C., Alacoque, X., Sentenac, M., & Arnaud, C. (2015). Kml and kml3d: R packages to cluster longitudinal data. *Journal of Statistical Software, 65*(4), 1–34. https://doi.org/10.18637/jss.v065.i04

Genolini, C., t'Ecochard, R., & Jacqmin-Gadda, H. (2013). Copy mean: A new method to impute intermittent missing values in longitudinal studies. *Open Journal of Statistics*, 3 (4A), https://doi.org/10.4236/ojs.2013.34A004

Germeys, L., De Gieter, S. (2017). Psychological detachment mediating the daily relationship between workload and marital satisfaction. *Frontiers in Psychology,* 7(2036). https://doi.org/10.3389/fpsyg.2016.02036

Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dikkers, J. S. E., Van Hooff, M. L. M., & Kinnunen, U. M. (2005). Work-home interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. *Work & Stress*, *19*(4), 319–339. https://doi.org/10.1080/02678370500410208

Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, *25*(2), 108–127. https://doi.org/10.1080/02678373.2011.595947

Guyatt, G. H., Oxman, A. D., Vist, G. E., Kunz, R., Falck-Ytter, Y., Alonso-Coello, P., Schünemann, H. J., & GRADE Working Group (2008). GRADE: an emerging consensus on rating quality of evidence and strength of

recommendations. *British Medical Journal (Clinical research ed.)*, *336*(7650), 924–926. https://doi.org/10.1136/bmj.39489.470347.AD

Halbesleben, J. R. B., Neveu, J.-P., Paustian-Underdahl, S. C., & Westman, M. (2014). Getting to the "COR": Understanding the role of resources in conservation of resources theory. *Journal of Management*, *40*(5), 1334–1364. https://doi.org/10.1177/0149206314527130

Hammer, L. B., Kossek, E. E., Yragui, N. L., Bodner, T. E., & Hanson, G. C. (2009). Development and Validation of a Multidimensional Measure of Family Supportive Supervisor Behaviors (FSSB). *Journal of Management*, *35*(4), 837–856. https://doi.org/10.1177/0149206308328510

Hanson, G. C., Hammer, L. B., & Colton, C. L. (2006). Development and validation of a multidimensional scale of perceived work-family positive spillover. *Journal of Occupational Health Psychology*, *11*(3), 249–265. https://doi.org/10.1037/1076-8998.11.3.249

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513

Hobfoll, S. E., Halbesleben, J., Neveu, J.-P., & Westman, M. (2018). Conservation of Resources in the Organizational Context: The Reality of Resources and Their Consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 103–128. https://doi.org/10.1146/annurev-orgpsych-032117-104640

Hofmans, J., Morin, A., Breitsohl, H., Ceulemans, E., Chénard-Poirier, L., Driver, C., . . . Wille, B. (2021). The baby and the bathwater: On the need for substantive–

methodological synergy in organizational research. *Industrial and Organizational Psychology*, *14*(4), 497-504. https://doi.org/10.1017/iop.2021.111

Hornung, S., Glaser, J., Rousseau, D. M., Angerer, P., & Weigl, M. (2011). Employee-oriented leadership and quality of working life: mediating roles of idiosyncratic deals. *Psychological Reports*, *108*(1), 59–74. https://doi.org/10.2466/07.13.14.21.PR0.108.1.59-74

Ilies, R., Pluut, H., & Aw, S. S. Y. (2015). Studying employee well-being: moving forward. *European Journal of Work and Organizational Psychology, 24*(6), 848–852. https://doi.org/10.1080/1359432X.2015.1080241

Ilies, R., Schwind, K. M., Wagner, D. T., Johnson, M. D., DeRue, D. S., & Ilgen, D. R. (2007). When can employees have a family life? The effects of daily workload and affect on work-family conflict and social behaviors at home. *Journal of Applied Psychology, 92*(5), 1368–1379. https://doi.org/10.1037/0021-9010.92.5.1368

Inceoglu, I., Arnold, K. A., Leroy, H., Lang, J. W. B., & Stephan, U. (2021). From microscopic to macroscopic perspectives and back: The study of leadership and health/well-being. *Journal of Occupational Health Psychology, 26*(6), 459–468. https://doi.org/10.1037/ocp0000316

Inceoglu, I., Thomas, G., Chu, C., Plans, D., & Gerbasi, A. (2018). Leadership behavior and employee well-being: an integrated review and a future research agenda. *Leadership Quarterly*, *29*, 179–202. https://doi.org/10.1016/j.leaqua.2017.12.006

Inegbedion, H., Inegbedion, E., Peter, A., & Harry, L. (2020). Perception of workload balance and employee job satisfaction in work organisations. *Heliyon, 6*(1), e03160. https://doi.org/10.1016/j.heliyon.2020.e03160

International Labor Organization (2021). *Key principles underlying sanctioning procedures applicable to occupational safety and health violations*. Retrieved July 17, 2023, from https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/national-occupational-safety-and-health-systems-and-programmes/WCMS_797461/lang--en/index.htm

International Labor Organization (2022). *Working Time and Work-Life Balance Around the World.* International Labour Office.

International Test Commission, (2017). *The ITC Guidelines for Translating and Adapting Tests* (2ed edn.). ITC.

Kacmar, K. M., Witt, L. A., Zivnuska, S., & Gully, S. M. (2003). The interactive effect of leader–member exchange and communication frequency on performance ratings. *Journal of Applied Psychology*, *88*, 764–772. doi:10.1037/0021-9010.88.4.764

Kahn, R. L., Wolfe, D.M., Quinn, R.P., Snoek, J. D., & Rosenthal, R. A. (1964). *Organizational Stress: Studies in Role Conflict and Ambiguity*. Wiley.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*(4), 692–724. https://doi.org/10.2307/256287

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: the day reconstruction

method. *Science, 306*(5702), 1776–1780. https://doi.org/10.1126/science.1103572

Kaplan, S., Bradley, J. C., Luchman, J. N., & Haynes, D. (2009). On the role of positive and negative affectivity in job performance: A meta-analytic investigation. *Journal of Applied Psychology*, 94(1), 162–176. https://doi.org/10.1037/a0013115

Karasek, R. A. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, *24*(2), 285–308. https://doi.org/10.2307/2392498

Katz, D., Kahn, R. L. (1978). *The Social Psychology of Organizations*. Wiley.

Kauppila, O.-P. (2014). So, what am I supposed to do? A multilevel examination of role clarity. *Journal of Management Studies, 51*(5), 737–763. https://doi.org/10.1111/joms.12042

Kelemen, T. K., Matthews, S. H., & Breevaart, K. (2020). Leading day-to-day: A review of the daily causes and consequences of leadership behaviors. *The Leadership Quarterly*, *31*(1), Article 101344. https://doi.org/10.1016/j.leaqua.2019.101344

Kelloway, E. K., & Gilbert, S. (2017). Does It Matter Who Leads Us?: The Study of Organizational Leadership. In Chmiel, N., Fraccaroli, F., Sverke, M. (Eds.), *An Introduction to Work and Organizational Psychology*. https://doi.org/10.1002/9781119168058.ch11

Kelly, E., Moen, P. (2020a). Fixing the overload problem at work. *MIT Sloan Management Review*;(Reprint #61404).

Kelly, E., & Moen, P. (2020b). Overload: How good jobs went bad and what we can do about it. *Work and Occupations*, 49(1), 135–138. https://doi.org/10.1177/07308884211031976

Kempen, R., Roewekaemper, J., Hattrup, K., & Mueller, K. (2019). Daily affective events and mood as antecedents of life domain conflict and enrichment: A weekly diary study. *International Journal of Stress Management, 26*(2), 107–119. https://doi.org/10.1037/str0000104

Kinnunen, U., Feldt, T., Siltaloppi, M., & Sonnentag, S. (2011). Job demands–resources model in the context of recovery: Testing recovery experiences as mediators. *European Journal of Work and Organizational Psychology*, *20*(6), 805–832. https://doi.org/10.1080/1359432X.2010.524411

Kniffin, K. M., Narayanan, J., Anseel, F., Antonakis, J., Ashford, S. P., Bakker, A. B., Bamberger, P., Bapuji, H., Bhave, D. P., Choi, V. K., Creary, S. J., Demerouti, E., Flynn, F. J., Gelfand, M. J., Greer, L. L., Johns, G., Kesebir, S., Klein, P. G., Lee, S. Y., . . . Vugt, M. v. (2021). COVID-19 and the workplace: Implications, issues, and insights for future research and action. *American Psychologist, 76*(1), 63–77. https://doi.org/10.1037/amp0000716

Kossek, E. E., Ruderman, M. N., Braddy, P. W., & Hannum, K. M. (2012). Work–nonwork boundary management profiles: A person-centered approach. *Journal of Vocational Behavior*, *81*(1), 112–128. https://doi.org/https://doi.org/10.1016/j.jvb.2012.04.003

Kossek, E. E., Perrigino, M., & Rock, A. G. (2021). From ideal workers to ideal work for all: A 50-year review integrating careers and work-family research with a

future research agenda. *Journal of Vocational Behavior, 126*, 103504. https://doi.org/https://doi.org/10.1016/j.jvb.2020.103504

Kunisch, S., zu Knyphausen-Aufsess, D., Bapuji, H., Aguinis, H., Bansal, T., Tsui, A. S., & Pinto, J. (2023). Using review articles to address societal grand challenges. *International Journal of Management Reviews, 25*(2), 240–250. https://doi.org/https://doi.org/10.1111/ijmr.12335

Kuykendall, L., Tay, L., & Ng, V. (2015). Leisure engagement and subjective well-being: A meta-analysis. *Psychological bulletin*, *141*(2), 364–403. https://doi.org/10.1037/a0038508

Lanaj, K., Gabriel, A.S., Chawla, N. (2021). The self-sacrificial nature of leader identity: understanding the costs and benefits at work and home. *Journal of Applied Psychology, 106*(3):345–63.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, *33*(1), 159–174.

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. Springer Publishing.

Leon, M. R., Halbesleben, J. R. B., & Paustian-Underdahl, S. C. (2015). A dialectical perspective on burnout and engagement. *Burnout Research*, *2*(2), 87–96. https://doi.org/https://doi.org/10.1016/j.burn.2015.06.002

Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands-resources model: A meta-analytic review of longitudinal studies. *Work & Stress*, *33*(1), 76–103. https://doi.org/10.1080/02678373.2018.1529065

Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology*, 44(6), 868– 896. https://doi.org/10.1086/218177

Liang, L. H., Hanig, S., Evans, R., Brown, D. J., & Lian, H. (2018). Why is your boss making you sick? A longitudinal investigation modeling time lagged relations between abusive supervision and employee physical health. *Journal of Organizational Behavior*, *39*(9), 1050–1065. https://doi.org/10.1002/job.2248

Liu, D., Chen, Y., & Li, N. (2021). Tackling the negative impact of COVID-19 on work engagement and taking charge: A multi-study investigation of frontline health workers. *Journal of Applied Psychology*, *106*(2), 185–198. https://doi.org/10.1037/apl0000866

Liu, Y., Wang, M., Chang, C.-H., Shi, J., Zhou, L., & Shao, R. (2015). Work-family conflict, emotional exhaustion, and displaced aggression toward others: the moderating roles of workplace interpersonal conflict and perceived managerial family support. *Journal of Applied Psychology*, *100*(3), 793–808.

Lopez-Gomez, I., Hervas, G., & Vazquez, C. (2015). An adaptation of the positive and negative affect schedules (PANAS) in a Spanish general sample. *Behavioral Psychology, 23*(3), 529–548.

Lundqvist, D., Reineholm, C., Ståhl, C., & Wallo, A. (2022). The impact of leadership on employee well-being: on-site compared to working from home. *BMC Public Health, 22*(1), 2154. https://doi.org/10.1186/s12889-022-14612-9

Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 1*(1), 3–30. https://doi.org/10.1111/j.1754-9434.2007.0002.x

Madrid, H. P., Patterson, M. G., Birdi, K. S., Leiva, P. I., & Kausel, E. E. (2014). The role of weekly high-activated positive mood, context, and personality in innovative work behavior: A multilevel and interactional model. *Journal of Organizational Behavior*, *35*(2), 234–256. https://doi.org/https://doi.org/10.1002/job.1867

Madrid, H. P., Vasquez, C. A., & Patterson, M. (2020). Measurement of the psychosocial work environment in Spanish: Validation of the psychosocial factors questionnaire 75 (PSF-Q75) to capture demands and resources at different levels of analysis. *Frontiers in Psychology*, *11*, 580196. https://doi.org/10.3389/fpsyg.2020.580196

Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: recent research and its implications for psychiatry. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, *15*(2), 103–111. https://doi.org/10.1002/wps.20311

McGrath, E., Cooper-Thomas H.D., Garrosa, E., Sanz-Vergel, A.I., Cheung, G.W. (2017). Rested, friendly, and engaged: the role of daily positive collegial interactions at work. *Journal of Organizational Behavior, 38*(8):1213–1226. https://doi.org/10.1002/job.2197

McKinsey (2021). The postpandemic future of work: hybrid, remote, and what's ahead. McKinsey & Company, May 22. https://www.mckinsey.com/featured-insights/themes/the-postpandemic-futureof-work-hybrid-remote-and-whats-ahead

Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. Drenth, H. Thierry, & C. J. de Wolff (Eds), *Handbook of work and organizational psychology* (pp. 5-33). Psychology Press.

Moen, P., Kelly, E. L., Fan, W., Lee, S.-R., Almeida, D., Kossek, E. E., & Buxton, O. M. (2016). Does a Flexibility/Support Organizational Initiative Improve High-Tech Employees' Well-Being? Evidence from the Work, Family, and Health Network. *American Sociological Review*, *81*(1), 134–164. https://doi.org/10.1177/0003122415622391

Montano, D., Reeske, A., Franke, F., and Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective. *Journal of Organizational Behavior*, *38*, 327– 350. https://doi.org/10.1002/job.2124

Morgeson, F. P., Mitchell, T. R., & Liu, D. (2015). Event System Theory: An Event-Oriented Approach to the Organizational Sciences. *Academy of Management Review*, *40*(4), 515–537. https://doi.org/10.5465/amr.2012.0099

Munir, F., Nielsen, K., Garde, A. H., Albertsen, K., & Carneiro, I. G. (2012). Mediating the effects of work–life conflict between transformational leadership and healthcare workers' job satisfaction and psychological wellbeing. *Journal of Nursing Management*, *20*(4), 512–521. https://doi.org/10.1111/j.1365-2834.2011.01308.x

Munn, Z., Peters, M. D. J., Stern, C. et al. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*, 143. https://doi.org/10.1186/s12874-018-0611-x

Nielsen, K., & Taris, T. W. (2019). Leading well: Challenges to researching leadership in occupational health psychology-and some ways forward. *Work & Stress*, *33*(2), 107-118.

Nielsen, K., Nielsen, M. B., Ogbonnaya, C., Känsälä, M., Saari, E., and Isaksson, K. (2017). Workplace resources to improve both employee well-being and performance: a systematic review and meta-analysis. *Work Stress, 31,* 101–120. https://doi.org/10.1080/02678373.2017.1304463

Nielsen, K., Randall, R., Yarker, J., & Brenner, S.-O. (2008). The effects of transformational leadership on followers' perceived work characteristics and psychological well-being: A longitudinal study. *Work & Stress*, 22(1), 16–32. https://doi.org/10.1080/02678370801979430

Nixon, A. E., Mazzola, J. J., Bauer, J., Krueger, J. R., & Spector, P. E. (2011). Can work make you sick? A meta-analysis of the relationships between job stressors and physical symptoms. *Work & Stress, 25*(1), 1–22. https://doi.org/10.1080/02678373.2011.569175

Ohly, S., & Gochmann, V. (2017). Chapter 12: Diary studies in leadership. In B. Schyns, R.J. Hall, P. Neves (Eds)*, Handbook of Methods in Leadership Research (pp. 296–316).* Edward Elgar Publishing. https://doi.org/10.4337/9781785367281.00020

Ouweneel, E., Le Blanc, P. M., Schaufeli, W. B., & van Wijhe, C. I. (2012). Good morning, good day: A diary study on positive emotions, hope, and work engagement. *Human Relations*, 65(9), 1129–1154. https://doi.org/10.1177/0018726711429382

Parker, S. L., Dawson, N., Van den Broeck, A., Sonnentag, S., & Neal, A. (2021). Employee motivation profiles, energy levels, and approaches to sustaining energy: A two-wave latent-profile analysis. *Journal of Vocational Behavior*, *131*, 103659.

Peiró, J. M., Kozusznik, M. W., Rodríguez-Molina, I., & Tordera, N. (2019). The Happy-Productive Worker Model and Beyond: Patterns of Wellbeing and Performance at Work. *International journal of environmental research and public health, 16*(3), 479. https://doi.org/10.3390/ijerph16030479

Peiró, J. M., Montesa, D., Soriano, A., Kozusznik, M. W., Villajos, E., Magdaleno, J., Djourova, N. P., et al. (2021). Revisiting the Happy-Productive Worker Thesis from a Eudaimonic Perspective: A Systematic Review. *Sustainability, 13*(6), 3174. http://dx.doi.org/10.3390/su13063174

Podsakoff, N. P., Freiburger, K. J., Podsakoff, P. M., & Rosen, C. C. (2023). Laying the foundation for the challenge–hindrance stressor framework 2.0. *Annual Review of Organizational Psychology and Organizational Behavior*, *10*(1), 165–199. https://doi.org/10.1146/annurev-orgpsych-080422-052147

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., … Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews: A product from the ESRC Methods Programme*. Lancaster University. https://doi.org/10.13140/2.1.1018.4643

Posner, J., Russell, J. A., & Peterson, B. S. (2005). The circumplex model of affect: an integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and psychopathology*, *17*(3), 715–734. https://doi.org/10.1017/S0954579405050340

Quijano, S. D., Navarro, J., Yepes, M., Berger, R., & Romeo, M. (2008). La auditoría del sistema humano (ASH) para el análisis del comportamiento humano en las organizaciones. *Papeles del Psicólogo, 29*(1), 92–106. https://www.redalyc.org/articulo.oa?id=77829111

Quinn, R. W., Spreitzer, G. M., & Lam, C. F. (2012). Building a sustainable model of human energy in organizations: Exploring the critical role of resources. *Academy of Management Annals*, *6*(1), 337–396. https://doi.org/10.5465/19416520.2012.676762

Rantanen, J., Kinnunen, U., & Pulkkinen, L. (2013). The role of personality and role engagement in work-family balance. *Psihološka obzorja*, *22*, 14–26. https://doi.org/10.20419/2013.22.376

Rodell, J. B., & Judge, T. A. (2009). Can "good" stressors spark "bad" behaviors? The mediating role of emotions in links of challenge and hindrance stressors with citizenship and counterproductive behaviors. *Journal of Applied Psychology, 94*(6), 1438–1451. https://doi.org/10.1037/a0016752

Rodríguez-Carvajal, R., Herrero, M., van Dierendonck, D., de Rivas, S., & Moreno-Jiménez, B. (2019). Servant leadership and goal attainment through meaningful life and vitality: A diary study. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *20*(2), 499–521. https://doi.org/10.1007/s10902-017-9954-y

Rodríguez-Muñoz, A., Sanz-Vergel, A. I., Demerouti, E., & Bakker, A. B. (2014). Engaged at work and happy at home: A spillover–crossover model. *Journal of Happiness Studies*, *15*(2), 271–283. https://doi.org/10.1007/s10902-013-9421-3

Romeo, M., Berger, R., Yepes-Baldó, M., & Ramos, B. (2014). Adaptation and validation of the Spanish version of the "Survey Work-Home Interaction - NijmeGen" (SWING) to Spanish speaking countries. *Anales de Psicología.*

Rosseel, Y. (2012). "lavaan: An R package for structural equation modeling." *Journal of Statistical Software, 48*(2), 1–36. https://doi/10.18637/jss.v048.i02.

Rudolph, C., Allan, B., Clark, M., Hertel, G., Hirschi, A., Kunze, F., . . . Zacher, H. (2021). Pandemics: Implications for research and practice in industrial and organizational psychology. *Industrial and Organizational Psychology*, *14*(1-2), 1-35. https://doi.org/10.1017/iop.2020.48

Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, *39*, 1161–78. https://doi.org/10.1037/h0077714

Salanova, M., Bakker, A. B., & Llorens, S. (2006). Flow at work: Evidence for an upward spiral of personal and organizational Resources. *Journal of Happiness Studies*, 7(1), 1–22. https://doi.org/10.1007/s10902-005-8854-8

Santini, Z. I., Thygesen, L. C., Koyanagi, A., Stewart-Brown, S., Meilstrup, C., Nielsen, L., Olsen, K. R., Birkjær, M., McDaid, D., Koushede, V., & Ekholm, O. (2022). Economics of mental wellbeing: A prospective study estimating associated productivity costs due to sickness absence from the workplace in Denmark. *Mental Health & Prevention, 28*, 200247. https://doi.org/https://doi.org/10.1016/j.mhp.2022.200247

Sanz-Vergel, A. I., Sebastián, J., Rodríguez-Muñoz, A., Garrosa, E., Moreno-Jiménez, B., & Sonnentag, S. (2010). Adaptación del "Cuestionario de Experiencias de

Recuperación" a una muestra española [Adaptation of the "Recovery Experience Questionnaire" in a Spanish sample]. *Psicothema*, *22*(4), 990–996.

Schaufeli, W. B. (2015). Engaging leadership in the job demands-resources model. *Career Development International*, *20*, 446–463. https://doi.org/10.1108/CDI-02-2015-0025

Schaufeli, W.B., Bakker, A.B. (2003). UWES-Utrecht Work Engagement Scale: Test manual_UWES Espanol. Unpublished Manuscript, Department of Psychology, Utrecht University. https://www.wilmarschaufeli.nl/publications/Schaufeli/Test%20Manuals/Test_manual_UWES_Espanol.pdf

Schippers, M. C., & Hogenes, R. (2011). Energy management of people in organizations: A review and research agenda. *Journal of Business and Psychology, 26*(2), 193–203. https://doi.org/10.1007/s10869-011-9217-6

Seelos, C., Mair, J., & Traeger, C. (2023) The future of grand challenges research: Retiring a hopeful concept and endorsing research principles. *International Journal of Management Reviews, 25*, 251– 269. https://doi.org/10.1111/ijmr.12324

Semmer, N. K., Jacobshagen, N., Meier, L. L., & Elfering, A. H. (2007). Occupational stress research: The stress-as-offense-to-self perspective. In J. Houdmont & S. McIntyre (Eds.), *Occupational health psychology: European perspectives on research, education and practice* (Vol. 2, pp. 43–60). ISMAI Publishing.

Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to Do a Systematic Review: A Best Practice Guide for Conducting and Reporting Narrative

Reviews, Meta-Analyses, and Meta-Syntheses. *Annual Review of Psychology*, *70*(1), 747–770. https://doi.org/10.1146/annurev-psych-010418-102803

Siegrist, J. (2002). Effort-reward Imbalance at Work and Health. In Perrewe, P. and Ganster, D. (Eds.), *Research in Occupational Stress and Well Being* (Vol. 2: Historical and Current Perspectives on Stress and Health, pp. 261–291). JAI Elsevier.

Smit, B. W. (2016). Successfully leaving work at work: the self-regulatory underpinnings of psychological detachment. *Journal of Occupational and Organizational Psychology, 89*, 493–514.

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology, 88*(3), 518–528. https://doi.org/10.1037/0021-9010.88.3.518

Sonnentag, S. (2015). Dynamics of well-being. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 261–293. https://doi.org/10.1146/annurev-orgpsych-032414-111347

Sonnentag, S., & Binnewies, C. (2013). Daily affect spillover from work to home: Detachment from work and sleep as moderators. *Journal of Vocational Behavior, 83*(2), 198–208. https://doi.org/10.1016/j.jvb.2013.03.008

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*(3), 204–221. https://doi.org/10.1037/1076-8998.12.3.204

Sonnentag, S., Cheng, B. H., & Parker, S. L. (2022). Recovery from work: Advancing the field toward the future. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*(1), 33–60. https://doi.org/10.1146/annurev-orgpsych-012420-091355

Sonnentag, S., Fritz, C. (2015). Recovery from job stress: The stressor-detachment model as an integrative framework. *Journal of Organizational Behavior Management*, *36*, S72– S103. https://doi.org/10.1002/job.1924

Sonnentag, S., Schiffner, C. (2018). Psychological detachment from work during nonwork time and employee well-being: The role of leader's detachment. *The Spanish Journal of Psychology*, 22. e3. https://doi.org/10.1017/sjp.2019.2.

Steed, L. B., Swider, B. W., Keem, S., & Liu, J. T. (2021). Leaving work at work: A meta-analysis on employee recovery from work. *Journal of Management*, *47*(4), 867–897. https://doi.org/10.1177/0149206319864153

Stocker, D., Keller, A. C., Meier, L. L., Elfering, A., Pfister, I. B., Jacobshagen, N., & Semmer, N. K. (2019). Appreciation by supervisors buffers the impact of work interruptions on well-being longitudinally. *International Journal of Stress Management, 26*(4), 331–343. https://doi.org/10.1037/str0000111

Stocker, D., Jacobshagen, N., Krings, R., Pfister, I. B., & Semmer, N. K. (2014). Appreciative leadership and employee well-being in every day working life. *German Journal of Human Resource Management: Zeitschrift für Personalforschung*, *28*(1–2), 73–95. https://doi.org/10.1177/239700221402800105

Story, L. B., & Repetti, R. (2006). Daily occupational stressors and marital behavior. *Journal of family psychology : JFP : journal of the Division of Family*

Psychology of the American Psychological Association (Division 43), *20*(4), 690–700. https://doi.org/10.1037/0893-3200.20.4.690

Syrek, C. J., & Antoni, C. H. (2014). Unfinished tasks foster rumination and impair sleeping - particularly if leaders have high performance expectations. *Journal of Occupational Health Psychology*, *19*(4), 490–499. https://doi.org/10.1037/a0037127

Tadić Vujčić, M., Oerlemans, W. G. M., & Bakker, A. B. (2017). How challenging was your work today? The role of autonomous work motivation. *European Journal of Work and Organizational Psychology*, *26*(1), 81–93. https://doi.org/10.1080/1359432X.2016.1208653

Tadić, M., Bakker, A. B., & Oerlemans, W. G. M. (2015). Challenge versus hindrance job demands and well-being: A diary study on the moderating role of job resources. *Journal of Occupational and Organizational Psychology*, *88*(4), 702–725. https://doi.org/https://doi.org/10.1111/joop.12094

Taris, T. W., & Schaufeli, W. B. (2015). Individual well-being and performance at work: A conceptual and theoretical overview. In M. van Veldhoven, & R. Peccei (Eds.), *Well-being and performance at work: The role of context* (pp- 15–34). Psychology Press.

Teetzen, F., Bürkner, P.-C., Gregersen, S., & Vincent-Höper, S. (2022). The Mediating Effects of Work Characteristics on the Relationship between Transformational Leadership and Employee Well-Being: A Meta-Analytic Investigation. *International Journal of Environmental Research and Public Health, 19*(5), 3133. http://dx.doi.org/10.3390/ijerph19053133

ten Brummelhuis, L. L., & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist, 67*(7), 545–556. https://doi.org/10.1037/a0027974

TK (2023). Employer study: Mental stress in the workplace increasingly important - absenteeism up significantly [Arbeitgeber-Studie: Psychische Belastung am Arbeitsplatz immer bedeutender - Fehlzeiten deutlich gestiegen]. Retrieved 18 July, 2023, from https://www.tk.de/presse/themen/praevention/gesunder-arbeitsplatz/arbeitgeber-studie-whatsnext-2145326?tkcm=ab

Top Job (2023). TOP JOB-TRENDSTUDIE. Retrieved 18 July, 2023, from https://www.topjob.de/wissenswertes/detail/schnelligkeit-viele-unternehmen-arbeiten- am-limit/

To, M.L, Fisher, C. D., Ashkanasy, N.M., Rowe, P.A. (2012). Within-person relationships between mood and creativity. *Journal of Applied Psychology, 97*(3), 599–612. https://doi.org/10.1037/a0026097

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of internal medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

United Nations (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development*. UN Publishing.

Vantilborgh, T, Hofmans, J, Judge, TA. (2018). The time has come to study dynamics at work. *Journal of Organizational Behavior*, *39*, 1045–1049. https://doi.org/10.1002/job.2327

Venz, L., Pundt, A., & Sonnentag, S. (2018). What matters for work engagement? A diary study on resources and the benefits of selective optimization with compensation for state work engagement. *Journal of Organizational Behavior*, *39*(1), 26–38. https://doi.org/https://doi.org/10.1002/job.2207

von Allmen, N., Hirschi, A., Burmeister, A., & Shockley, K. M. (2023). The effectiveness of work–nonwork interventions: A theoretical synthesis and meta-analysis. *Journal of Applied Psychology.* Advance online publication. https://doi.org/10.1037/apl0001105

Wang, Y.-R., Ford, M. T., Wang, Y., & Jin, J. (2019). Shifts and variability in daily interpersonal justice are associated with psychological detachment and affect at home. *Journal of Vocational Behavior*, *115*. https://doi.org/10.1016/j.jvb.2019.05.004

Warr, P. (1999). Well-being and the workplace. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 392–412). Russell Sage Foundation.

Waters, L., Algoe, S. B., Dutton, J., Emmons, R., Fredrickson, B. L., Heaphy, E., … Steger, M. (2022). Positive psychology in a pandemic: buffering, bolstering, and building mental health. *The Journal of Positive Psychology*, *17*(3), 303–323. https://doi.org/10.1080/17439760.2021.1871945

Weiss, H. M., & Cropanzano, R. (1996). Affective Events Theory: A Theoretical Discussion of the Structure, Causes and Consequences of Affective Experiences

at Work. In B. M. Staw, & L. L. Cummings (Eds.), *Research in Organizational Behavior: An Annual Series of Analytical Essays and Critical Reviews* (pp. 1-74). JAI Press.

Wells, J., Scheibein, F., Pais, L., Rebelo Dos Santos, N., Dalluege, C. A., Czakert, J. P., & Berger, R. (2023). A Systematic Review of the Impact of Remote Working Referenced to the Concept of Work-Life Flow on Physical and Psychological Health. *Workplace health & safety*, 21650799231176397. Advance online publication. https://doi.org/10.1177/21650799231176397

Wheeler, L., & Reis, H. T. (1991). Self-recording of everyday life events: Origins, types, and uses. *Journal of Personality, 59*(3), 339–354. https://doi.org/10.1111/j.1467-6494.1991.tb00252.x

World Bank (2023). World Bank, world development indicators database. Retrieved January 25, 2023, from https://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS?locations=ES

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2012). A diary study on the happy worker: How job resources relate to positive emotions and personal resources. *European Journal of Work and Organizational Psychology*, *21*(4), 489–517. https://doi.org/10.1080/1359432X.2011.584386

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior, 74*(3), 235–244. https://doi.org/10.1016/j.jvb.2008.11.003

Xanthopoulou, D., & Bakker, A.B. (2021). Antecedents and consequences of work engagement: a multilevel nomological net. In J.P. Meyer, & B.

Schneider (Eds), *A Research Agenda for Employee Engagement in a Changing World of Work* (pp. 37-51). Edward Elgar Publishing.

Yao, L., Li, P., & Wildy, H. (2021). Health-Promoting Leadership: Concept, Measurement, and Research Framework. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2021.602333

Yukl, G.A. (2013). *Leadership in Organizations* (8th Ed.). Prentice-Hall

Zappalà, S., Swanzy, E. K., & Toscano, F. (2022). Workload and mental well-being of homeworkers: The mediating effects of work-family conflict, sleeping problems, and work engagement. *Journal of Occupational and Environmental Medicine*, *64*(10), e647–e655. https://doi.org/10.1097/JOM.0000000000002659

Zohar, D., Tzischinski, O., & Epstein, R. (2003). Effects of energy availability on immediate and delayed emotional reactions to work events. *The Journal of applied psychology*, *88*(6), 1082–1093. https://doi.org/10.1037/0021-9010.88.6.1082

Appendices

Appendix A: Complete List of Search Terms Used for the Literature Search in Study 1 - Scoping Review

Leadership Search Terms (based on Montano et al, 2017):

Leadership* OR "Middle Level Managers" OR "Supervisor Employee Interaction" OR "Manager Employee Interaction" OR "Employee Supervisor Interaction" OR ((leader* OR supervisor*) N1 (qualit* OR behavio* OR style* OR skill* OR characteristic* OR traits OR attributes OR personality OR attitude* OR abus* OR destructive OR aggressi* OR negative OR tyrannic* OR undermining OR psychopathic OR toxic OR despotic OR "laissez faire" OR passive OR narcissistic OR transform* OR transact* OR charisma* OR "health-specific" OR "health-domain" OR "health-oriented" OR authentic OR ethic* OR shared OR servant OR distributed OR collective OR collaborative OR consensus OR climate)) OR "consideration and initiating structure" OR "petty tyranny" OR bossing OR "leader-member-exchange" OR LMX OR "leader-following consensus" OR "leader-follower agreement" OR "leader-member agreement" OR "group level leader*") NOT (PO Animals)

Wellbeing Search Terms (based on Montano et al., 2017):

("mental health" OR "psychological health" OR "well-being" OR wellbeing OR "job related affective well-being" OR eudaimonia OR "quality of life" OR "quality of work life" OR "quality of working life" OR "quality of worklife" OR "work ability" OR "working ability" OR workability OR "performance capability" OR "capability of performance" OR employability OR "evidence of functioning" OR "social functioning" OR "psychological functioning" OR flourishing OR "meaning in life" OR "purpose of life" OR "mental prosperousness" OR prosperousness OR "health effects" OR "health implications" OR "impairment to health" OR "health detriment" OR "health consequences" OR "health 4 status" OR "state of health" OR "health situation" OR "health disorders" OR "health hazard" OR "health risk" OR "health problem" OR "health issue" OR "danger to health" OR "benefit to health" OR "health benefit" OR "emotional state*" OR "positive emotion*" OR "positive feeling*" OR "positive affect*" OR "workplace emotion*" OR "negative affect*" OR "negative emotion" OR "negative feeling*" OR positivity OR "affect balance" OR mood OR moods OR

"emotion expressiveness" OR "expressive emotion" OR gladness OR happiness OR "mental balance" OR vitality OR vigilance OR sadness OR "Boredom" OR "psychologic* stress" OR "psychological strain*" OR "psychological distress*" OR "chronic stress*"OR "distress" OR "job stress" OR "job tension" OR "job-induced tension" OR "job strain" OR "work stress" OR "job related strain" OR "job related stress" OR "work related stress" OR "occupational stress*" OR "workplace stress" OR "organizational stress*" OR "organisational stress*" OR "Stress Reactions" OR ((employee* OR subordinate* OR follower*) AND (stress* OR strain OR coping)) OR fatigue OR lassitude OR "general tiredness" OR "Sleepiness" OR sleep quality OR exhaustion OR exhausted OR nervousness OR irritation OR irritability OR anxiety OR frustration OR agitation OR hypervigilance OR "rumination (cognitive process)" OR cogitation OR "need for recovery" OR (((complain* OR symptom* N1 (health OR psycholog* OR psychosomati* OR psychovegetative* OR psychophysiolog*) OR "psychosomatic disorder" OR "somatoform disorders" OR tinnitus OR headache* OR "unspecific symptoms" OR "nonspecific symptoms" OR "unexplained symptoms" OR "unspecific pain" OR "nonspecific pain" OR "unexplained pain" OR "unspecific complaints" OR "nonspecific complaints" OR "unexplained complaints" OR discomfort OR "chronic pain" OR "chronic complaints"))

Longitudinal Search Terms:

Longitudinal OR panel OR diary OR daily*

WNWI Search Terms Used for Screening the Identified Articles (Based on Beigi et al., 2019):

“Work-social system adaptation” OR “Work-family accommodation” OR “Work-family boundary” OR “Work-social system fit” OR “Work-family balance” OR “Work-family conflict” OR “Work-family articulation” OR “Work-family border” OR “Work-family enrichment” OR “Work-family combination” OR “Work-family congruence” OR “Work-family facilitation” OR “Work-family harmony” OR “Work-family compensation” OR “Work-family spillover (positive)” OR “Work-family interaction” OR “Work-family enhancement” OR “Work-home interaction” OR “Work-family interface” OR “Work-family expansion” OR “Work-family intersection” OR “Work-family integration” OR “Work-family linkage” OR “Work-family fit” OR “Work-family management” OR “Work-family resource drain” OR “Work-leisure

compensation” OR “Work-family segmentation” OR “Work-leisure segmentation” OR “Work-family spillover” OR “Work-leisure spillover” OR “Work-home conflict” OR “Work-home segmentation” OR “Work–nonwork conflict” OR “Work-life balance” OR “Work/nonwork expansion” OR “Work-life harmony” OR “Work-nonwork enhancement” OR “Work-nonwork compensation” OR “Work/nonwork segmentation” OR “Work-nonwork integration” OR “Work-nonwork spillover OR “Work-home enrichment” OR “Work/nonwork interface” OR “Work-nonwork enhancement” OR “Work–home interface” OR “Work nonwork intersection

Appendix B: Adapted GRADE Rating of the Screened Articles

Adapted GRADE rating of the screened articles

Index-Nr.	Category	Reference (Year)	Sample recruitment	GRADE rating	Reasons for downgrading
1	Category 1	Davis et al. (2015)	Company collaboration	Moderate ***	Potential confounding effects (Effects of intervention actions were not tested independently)
2		Demerouti et al. (2013)	Company collaboration	High ****	None
3		Fan et al. (2019)	Company collaboration	Low **	Low effect sizes and missing sig. levels
4		Hornung et al. (2011)	Company collaboration	High ****	None
5		Liang et al. (2018)	Financial remuneration	High ****	None
6		Liu et al. (2021)	Company collaboration	Moderate ***	Arbitrary temporal lense
7		Moen et al. (2016)	Company collaboration	Moderate ***	Relationship is not significant
8		Munir et al. (2012)	Company collaboration	Low **	Mediator is not assessed time-lagged
9		Stocker et al. (2019)	Company collaboration	High ****	None
10	Category 2	Barnes et al. (2020)	Financial remuneration	High ****	None
11		Blanco-Donoso et al. (2017)	Private network	High ****	None
12		Breevaart and Bakker (2018)	Company collaboration	High ****	None
13		Breevaart and Tims (2018)	Company collaboration	Low **	Potential confounding effects (Constructs of Supervisor vs. Colleague as social resources were not investigated independently)
14		Cangiano et al. (2019)	Private network	High ****	None
15		Chong et al. (2020)	Financial remuneration	Low **	Potential confounding effects (Items address "organizational support" rather than

				specifically direct supervisor support)
16	Derks et al. (2015)	Private network	High ****	None
17	Liu et al. (2015)	Company collaboration	High ****	None
18	Rodríguez-Carvajal et al. (2019)	Private network	High ****	None
19	Stocker et al. (2014)	Private network	High ****	None
20	Syrek and Antoni (2014)	Private network	High ****	None
21	Wang et al. (2019)	Financial renumeration	High ****	None

Appendix C: Ethical Approval of Institutional Review Board

UNIVERSITAT DE BARCELONA

Oficina de Gestió de la Recerca
Pavelló Rosa (recinte Maternitat) primer pis
Travessera de les Corts, 131-159 93-4035398
08028 Barcelona

Bioethics Committee of the Universitat de Barcelona

Gemma Marfany Nadal, as Academic Secretary of the Committee of Bioethics of Universitat de Barcelona (CBUB).

CERTIFIES:

that the application for a project Thesis presented by Mr. **Jan Philipp Czakert**, PhD student of the Department of Social Psychology and Quantitative Psychology, at Universitat de Barcelona, entitled **"Leadership and the influence on employee's work-home interface and well-being: A review and extensive longitudinal study"** and supervised by Dr. **Rita Gisela Berger** and **David Leiva Ureña**, has been evaluated by the CBUB. This Committee agreed on February 15, 2021 that this PhD project conforms to the bioethics directives of Universitat de Barcelona, and therefore, the CBUB considers favourably the Thesis project.

To this end, the Secretary of the CBUB signs this document, with the acknowledgement of the President of this Committee, in Barcelona, February 16, 2021.

Acknowledged by
President of the Bioethics Committee of the Universitat de Barcelona

Jordi García-Fernàndez

Institutional Review Board (IRB00003099)

Appendix D: Measurements Used in the Intensive Longitudinal Study

This appendix includes all measurement instruments used for the intensive longitudinal study (Study 2). All items could be answered on a Likert scale ranging from *strongly agree* (1) to *strongly disagree* (5). The English version of the items is reported in square parentheses.

General questionnaire

Transformational leadership

Instruction: A continuación, por favor, indique en qué medida las siguientes afirmaciones se aplican a su supervisor/a directo (la persona de la que depende directamente y que supervisa su trabajo de forma habitual). [Please indicate to what extent the following statements apply to your direct supervisor (the person to whom you report directly and who supervises your work on a regular basis).]

1. Confío en la capacidad de mi supervisor/a para superar algún obstáculo. [I have confidence in my supervisor's ability to overcome any obstacle.]
2. Mi supervisor/a desarrolla formas de motivarme. [My supervisor develops ways to motivate me.]
3. Me siento orgulloso de trabajar con mi supervisor/a. [I am proud to work with my supervisor.]
4. Mi supervisor/a dedica su tiempo a enseñar y formar. [My supervisor devotes his/her time to teaching and training.]
5. Mi supervisor/a considera que tengo diferentes necesidades, capacidades y aspiraciones que otras personas. [My supervisor considers that I have different needs, abilities, and aspirations than other people.]
6. Mi supervisor/a sugiere nuevas formar de ver como completar las tareas. [My supervisor suggests new ways of seeing how to complete tasks.]
7. Mi supervisor/a especifica la importancia de tener un fuerte sentido del propósito. [My supervisor specifies the importance of having a strong sense of purpose.]
8. Mi supervisor/a habla con entusiasmo acerca de los logros que deben conseguirse. [My supervisor speaks enthusiastically about the accomplishments to be achieved.]

Daily evening questionnaire

Instruction: Por favor, señale su grado de acuerdo o desacuerdo con las siguientes afirmaciones: Hoy... [Please indicate your degree of agreement or disagreement with the following statements: Today...].

Daily work engagement

1. ...he estado inmerso en mi trabajo. […I have been immersed in my work.]
2. ...me he sentido lleno de energía en mi trabajo. […I felt full of energy at my work.]
3. ...he estado entusiasmado con mi trabajo. [...I have been enthusiastic about my work]

Daily role clarity

1. ...he sabido cómo hacer mi trabajo. […I knew how to go about getting my job done.]
2. ...he entendido cómo mi trabajo encaja en el objetivo general de la organización. [I have understood how my work fits into the overall objective of the organization.]
3. ...he sabido cuán importante es mi trabajo para los clientes/usuarios/otras personas de la organización. [I have known how important my work is to customers/users/other people in the organization.]

Daily workload

1. ...he tenido que realizar una gran cantidad de trabajo. […I had to do a lot of things at work.]
2. ...he tenido que hacer muchas cosas en el trabajo. […I have had to do a lot of things at work.]
3. ...he tenido que hacer una cantidad excesiva de trabajo. [I have had to do an excessive amount of work.]

Daily morning questionnaire

Instruction: Las siguientes afirmaciones se refieren a sus experiencias y actividades de ayer después de terminar su jornada laboral. Por favor, señale su grado de acuerdo o desacuerdo con las siguientes afirmaciones: [The following statements refer to your experiences and activities yesterday after the end of your workday. Please indicate your degree of agreement or disagreement with the following statements:]

Daily positive work-nonwork spillover

1. Ayer, estuve de buen humor en el trabajo y esto me ayudó a estar de buen humor en casa. [Yesterday, I was in a good mood at work and this helped me to be in a good mood at home.]
2. Ayer, ser feliz en el trabajo mejoró mi ánimo en casa. [Yesterday being happy at work improved my mood at home.]
3. Ayer, haber tenido un buen día en el trabajo me permitió ser optimista con mi pareja, familia y/o amigos.[Yesterday, having a good day at work allowed me to be optimistic with my partner, family and/or friends.]

Daily negative work-nonwork spillover

1. Ayer, tuve que trabajar tan duro que no he tenido tiempo para ninguna de mis aficiones. [Yesterday, I had to work so hard that I have not had time for any of my hobbies.]
2. Ayer, mis obligaciones laborales me dificultaron sentirme relajado/a en casa. [Yesterday, my work obligations made it difficult for me to feel relaxed at home.]
3. Ayer, no tuve energía para realizar actividades de ocio con mi pareja, familia y/o amigos a causa de mi trabajo. [Yesterday, I had no energy to do leisure activities with my partner, family and/or friends because of my work.]

Daily off-job recovery

1. Ayer, después de mi jornada laboral, me olvidé completamente del trabajo. [Yesterday, after my workday, I completely forgot about work.]
2. Ayer, después de mi jornada laboral, me tomé mi tiempo para descansar. [Yesterday, after my workday, I took my time to rest.]
3. Ayer, después de mi jornada laboral, realizé otras actividades que suponen un reto para mí. [Yesterday, after my workday, I engaged in other activities that challenge me.]
4. Ayer, después de mi jornada laboral, pude decidir por mí mismo qué actividades hacer durante mi tiempo libre. [Yesterday, after my workday, I was able to decide for myself what activities to do during my free time.]

EWB

Instruction: Las siguientes afirmaciones se refieren a este momento: Por favor, indique la opción que refleje mejor cómo se siente ahora. [The following statements refer to this moment: Please indicate the option that best reflects how you feel now.]

1. Motivado/a [Motivated]
2. Firme [Firm]
3. Entusiasmado/a [Enthusiastic]
4. Irritable [Irritated]
5. Agresivo/a [Aggressive]
6. Nervioso/a [Nervous]

Appendix E: Comparison of the Reliability Assessment Scores of the Daily Measurement Instruments for Three Different Imputed Datasets

	R_C			ICC		
	p50	**p40**	**p30**	**p50**	**p40**	**p30**
WE	0.70	0.70	0.69	0.77	0.77	0.78
WL	0.83	0.83	0.83	0.84	0.84	0.84
RC	0.63	0.63	0.62	0.75	0.75	0.75
RE	0.58	0.58	0.58	0.63	0.63	0.62
PWS	0.86	0.86	0.86	0.83	0.83	0.83
NWS	0.77	0.77	0.77	0.72	0.72	0.71
PA	0.72	0.72	0.72	0.77	0.77	0.77
NA	0.66	0.66	0.67	0.77	0.77	0.77

Note. R_C = Reliability of change. ICC = Longitudinal intra-class coefficients. p50 = 50% of missing daily data entries; p40 = 40% of missing daily data entries, p30 = 30% of missing daily data entries.

Appendix F: Proofread Confirmation by Native Speaker and Translation Professional

Study 1 was proofread by native English speaker, a translation professional with a Master's degree in Translation Studies. It follows the signed quality confirmation:

Dear Sirs,

I, Benjamin Wright, in my capacity as a holder of a Master's degree in Translation Studies (Pompeu Fabra University, Spain) and as a native English speaker familiar with the context of Organizational Psychology, reviewed the English of the manuscript "The influence of leadership on employee's work-nonwork interface and wellbeing: A scoping review". I confirm that the quality of the text meets the one required.

Kind regards,

Benjamin Wright, date: 11/02/2023