Preconditions and Mechanisms of Leadership: The Impact on Employee Well-Being

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Promotionsprüfungsausschuss:
Vorsitz des Ausschusses: Prof. Dr. Alexander Redlich
Erstgutachterin und Betreuerin der Dissertation: Prof. Dr. Sylvie Vincent-Höper
Zweitgutachterin: Prof. Dr. Anja Baethke
erster Disputationsgutachter: Prof. Dr. Jan Dettmers
zweiter Disputationsgutachter: Prof. Dr. Martin Spieß

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Teetzen, F., Klug, K., Steinmetz, H., Gregersen, S., & Vincent-Höper, S. (2023). Organizational health climate as a precondition for health-oriented leadership: Expanding the link between leadership and employee well-being. *Frontiers in Psychology*.

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Abbreviations

TFL Transformational Leadership

OHC Organizational Health Climate

Abstract

The goal of this dissertation is to complement research evidence of the relationship between leadership and employee well-being. Because the workforce in general, and particularly in the social care sector, is highly affected by stress and decreased mental well-being, better understanding of ways of enhancing employee well-being is greatly needed. According to research, leadership is directly and indirectly associated with employee well-being, and the link between these variables is well-established. However, many questions remain regarding how to optimally enhance employee well-being through leadership. For example, at the start of this dissertation, exactly how leaders can best influence employee well-being was unclear: although many work characteristics had been found to mediate the leadership-well-being relationship, thus indirectly linking leadership to employee well-being, their relative effectiveness was unclear. Thus, the first objective of this dissertation was to perform a meta-analysis to examine the relative effects of different job demand and job resource categories (personal, task-related, organizational and relational resources, and challenge and hindrance demands) in the relationship between transformational leadership and various aspects of employee well-being (affective-motivational, pleased-relaxed, depressed-exhausted and irritated-distressed) to enhance knowledge regarding the most relevant factors. The results of the first publication indicated that all of the examined job demand and resource categories are relevant mediators in the relationship between transformational leadership and employee well-being, while organizational resources were identified as the strongest mediator. The results also indicated that the relational patterns among leadership, work characteristics and well-being were different depending on the examined well-being outcomes. This indicates to choose well-being outcomes purposefully.

The second publication in this work, through a longitudinal, three-wave analysis, investigated organizational antecedents of leadership and found that organizational health climate is a valuable precondition for health-oriented leadership in childcare center teams. The role of health-oriented leadership as a mediator of organizational health climate and employee well-being within and between teams was also examined. Leadership was found to be a mediator linking health climate and job satisfaction in teams. The implications of these findings were discussed, on the basis of two levels of analysis (between-team and within-team).

Next to the question of how (health-oriented) leaders can be most optimally equipped and most effective in enhancing employee well-being, it is also important to gain knowledge

regarding how to train leaders to behave in a supportive manner. Thus, the third publication in this work involved a longitudinal cluster-randomized controlled trial examining the effectiveness of training childcare center directors through a supportive leadership intervention in enhancing employees' social and hedonic well-being. The intervention was found to effectively increase the social well-being of childcare employees at 1-month postintervention. It was more effective in increasing social well-being and decreasing emotional exhaustion among employees with higher rather than lower perceived quantitative workloads. Thus, this work identified an important boundary condition for the implementation of interventions.

This dissertation discusses the results of the three publications in light of complementing existing evidence regarding leadership and employee well-being, and describes limitations and avenues for future research in this field, on the basis of the results. It also provides practical implications for enhancing employee well-being, particularly in the social care sector. It is aimed at making a valuable contribution to research on leadership and employee well-being, and to the field of social care.

Zusammenfassung

Ziel dieser Dissertation ist es den Stand der Forschung zum Thema Führung und Mitarbeitendenwohlbefinden zu konkretisieren und zu erweitern. Die Erwerbsbevölkerung leidet unter Stress und einem beeinträchtigten mentalen Wohlbefinden und diese Situation ist besonders stark ausgeprägt im sozialen Sektor. Deshalb ist ein genaueres Verständnis der Wege zu einer verbesserten Gesundheitssituation für Beschäftigte aus diesem Bereich essenziell.

Führung wurde in der Forschung häufig direkt und indirekt mit Mitarbeitenden-wohlbefinden in Verbindung gebracht. Jedoch sind viele Fragen zu der Beziehung dieser zwei Variablen ungeklärt. Zum Beispiel war zum Start dieser Dissertation unklar, auf welche genaue Weise Führungskräfte Mitarbeitendenwohlbefinden bestenfalls beeinflussen: Während viele Arbeitscharakteristika als Mediatoren in der Führungskräfte-Mitarbeitendenwohlbefinden-Beziehung identifiziert wurden, war ihr Effekt im Vergleich zueinander unklar. Deshalb ist das erste Ziel dieser Dissertation meta-analytisch die relative Bedeutung mehrerer Arbeitsressourcen- und Arbeitsanforderungskategorien (persönliche, arbeitsbezogene, organisationale und relationale Ressourcen und herausfordernde bzw. hinderliche Anforderungen) als Mediatoren der Beziehung von Transformationaler Führung und mehrerer Mitarbeitendenwohlbefindens-facetten (affektiv-motivational, zufrieden-entspannt, depressiv-erschöpft, irritiert-gestresst) zu bestimmen, um Wissen darüber zu erlangen, welche die relevanteste Mediationskategorie von Arbeitscharakteristika ist. Die Ergebnisse der ersten Publikation zeigen, dass alle Kategorien von Arbeitscharakteristika signifikante Mediatoren in der Beziehung von Transformationaler Führung und Mitarbeitendenwohlbefinden darstellen, während organisationale Ressourcen als die stärksten Mediatoren identifiziert wurden. Die Ergebnisse zeigen außerdem, dass für unterschiedliche Wohlbefindenskategorien andere Mediationszusammenhänge sichtbar werden und die Wahl der abhängigen Wohlbefindensvariablen deshalb gut überlegt sein sollte.

Die zweite Publikation dieser Arbeit betrachtet organisationale Antezedenzien von Führung und hat in einer längsschittlichen Mehrebenenanalyse mit drei Messzeitpunkten gefunden, dass organisationales Gesundheitsklima eine wertvolle Vorbedingung von gesundheitsförderlicher Führung in Kitas gewesen ist. Die Arbeit fand außerdem, dass gesundheitsförderliche Führung ein Weg ist, durch den die Beziehung von Gesundheitsklima und Arbeitszufriedenheit der Mitarbeitenden auf Teamebene mediiert wird. Die Implikationen dieser

Befunde werden in der Arbeit vor dem Hintergrund der Mehrebenenstruktur (zwischen Teams und innerhalb von Teams) diskutiert.

Neben den Fragen, wie Führungskräfte mit optimalen Voraussetzungen ausgestattet und möglichst effektiv in der Förderung von Mitarbeitendenwohlbefinden sein können, beschäftigt sich die vorliegende Arbeit auch mit der Frage nach der optimalen Förderung von unterstützungsförderlichen Verhaltensweisen von Führungskräften. Deshalb evaluiert die dritte Publikation dieser Arbeit eine längsschnittliche Kontrollgruppenintervention mit Cluster-Randomizierung, um die Effektivität einer unterstützungsförderlichen Führungskräfte-intervention von Kita-Leitungskräften zu überprüfen, die sich in verbessertem sozialen und hedonistischen Wohlbefinden von Mitarbeitenden zeigt. Die Studie fand eine Effektivität der Intervention durch eine Erhöhung des sozialen Wohlbefindens der Mitarbeitenden einen Monat nach der Intervention. Ein zusätzliches Ergebnis war, dass die Intervention für solche Mitarbeitenden in Bezug auf soziales Wohlbefinden und emotionale Erschöpfung effektiver war, die eine hohe quantitative Arbeitslast hatten im Gegensatz zu denen, die eine niedrige quantitative Arbeitslast erlebten. Die Studie hat also Rahmenbedingungen identifiziert, die bei der Implementierung von Interventionen bedacht werden müssen.

Die vorliegende Arbeit diskutiert die Ergebnisse und Limitationen der Publikationen vor dem Hintergrund ihres Beitrages zu bereits bestehender Forschung zum Zusammenhang von Führung und Mitarbeitendenwohlbefinden. Außerdem werden Möglichkeiten und Notwendigkeiten der zukünftigen Forschung und der praktischen Anwendbarkeit der Befunde, besonders im sozialen Sektor, aufgezeigt. Damit versucht diese Dissertation einen wertvollen Beitrag zur Erforschung des Zusammenhangs von Führung und Mitarbeitendenwohlbefinden und dem sozialen Sektor zu leisten.

Introduction

In the modern world, well-being in the workplace is increasingly becoming a concern for organizations. Work stress is among the most prevalent causes of sickness-related absence from work and is a highly cost-intensive issue for organizations. In 2020, the loss of gross value added due to sickness absence was estimated to be 144 billion Euros in Germany (Brenscheidt et al., 2022), almost 25% of which was due to psychological and stress diseases. Additionally, the number of people in early retirement because of psychological and stress diseases has risen in the past 3 years (Brenscheidt et al., 2022). These numbers are particularly notable in the social care sector (e.g., education, child care and nursing), which have had, and continue to have, the highest sickness rates among all industrial sectors in Germany, thereby resulting in immense lost time costs and skill shortages (Brenscheidt et al., 2022; Kordt, 2014b). Thus, for the entire economy, and particularly the social care sector, stress must be prevented, and the well-being of employees must be enhanced to sustain employability. An important question is how employee well-being can best be enhanced.

To date, employee well-being has often been viewed as an individual matter (Dollard et al., 2019), and therefore person-directed approaches (i.e., cognitive-behavioral, stress management or resiliency elements, and relaxation and awareness techniques) have often been the focus of prevention measures and interventions (de Wijn & van der Doef, 2022). However, the literature suggests that employee well-being should be considered as a multi-layered phenomenon, because employees do not work in a vacuum (Inceoglu et al., 2018; Mathieu & Taylor, 2007; Nielsen et al., 2017; Zweber et al., 2015). Consequently, in addition to individual approaches, workplace enhancement approaches should complement the enhancement of employee well-being (Nielsen, Randall, et al., 2010; Sockoll et al., 2008).

Leadership has long been integral to workplace well-being enhancement, as indicated by several reviews and meta-analyses (K. A. Arnold, 2017; Montano et al., 2017). However, although research on the relationship between leadership and employee well-being was abundant before the work in this dissertation was undertaken, and many work characteristics had been identified to indirectly link the two variables (Gregersen et al., 2011; Hentrich et al., 2017; Wegge et al., 2014), a comparative analysis was lacking to enable conclusions to be drawn regarding their relative importance. Similarly, uncertainty existed regarding the preconditions for the optimal functioning of well-being supportive leadership (Inceoglu et al., 2021; Krick, Felfe,

Hauff, et al., 2022; Nielsen & Taris, 2019). Knowledge on these, however, would provide valuable to optimally support leaders.

Moreover, to achieve highly effective well-being supportive leadership, optimal training conditions must be provided. Although person-directed interventions with the goal of reducing impaired well-being and increasing positive well-being (i.e., resiliency training, awareness and relaxation techniques, and cognitive-behavioral components) have been extensively developed in the past 15 years, and found to effectively prevent and reduce stress-related outcomes, they have been shown to produce only short-term effects, whereas their long-term effectiveness is unknown (de Wijn & van der Doef, 2022). Structural approaches focusing on workplace enhancement are a promising avenue to complement the enhancement of employee well-being in the workplace (Inceoglu et al., 2018; Nielsen et al., 2017). Because leaders are central in designing employees' workplaces (K. A. Arnold, 2017), training leaders to enhance employee well-being has been identified as a valuable approach (Dimoff & Kelloway, 2017).

This work is aimed at closing the research gaps outlined above. First, it moves away from individual behavior approaches toward a more structural approach to enhance individual well-being by focusing on highly influential players, i.e., leaders. It wants to contribute to the understanding of optimal ways for leaders to effectively achieve well-being-enhancement. More specifically, the first publication (Teetzen et al., 2022), through a meta-analysis, seeks to determine the relative importance of the work characteristics through which leadership influences employee well-being. The second publication (Teetzen et al., in review), through a longitudinal, three-wave analysis, focuses on the optimal organizational preconditions for health-oriented leadership to achieve the most powerful well-being enhancement strategies. The publication also examines the mediation potential of health-oriented leadership in the relationship between the organizational health climate (OHC) and employee well-being. The work thereby differentiates between two levels of analysis (between-team level and within-team level) to detect differences in the mechanisms mediating OHC and employee well-being at both levels.

The third publication (Stein, Schümann, Teetzen, et al., 2021), in a longitudinal cluster-randomized controlled trial, examines the effectiveness of supportive leadership training in increasing employees' social and hedonic well-being. Additionally, it appraises an important boundary condition that might affect intervention effectiveness: high vs. low quantitative and

qualitative workloads of employees. An overview of the three publications in this work is provided in Figure 1.

Each publication makes specific contributions to previous research, as outlined in the publications and in the relevant sections below.

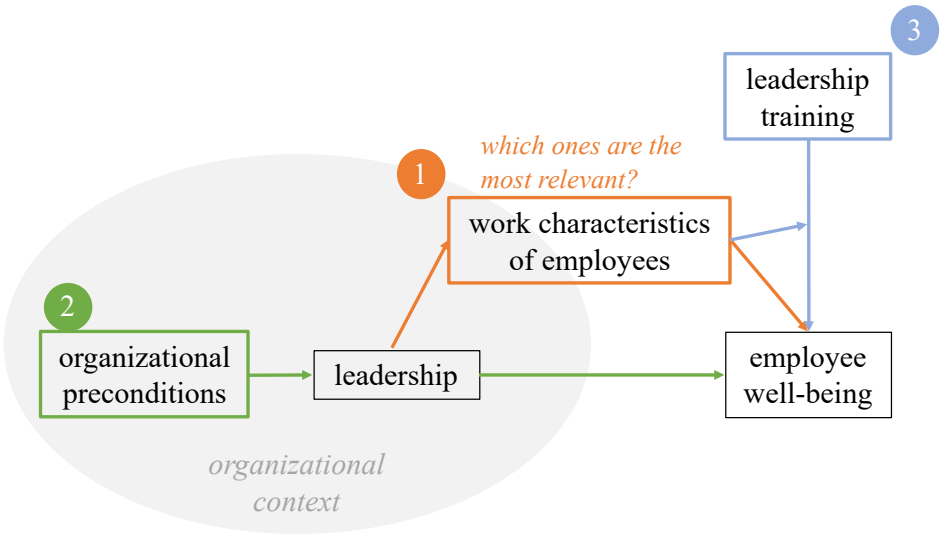

Figure 1. Overview over the three publications of this dissertation.

State of Recent Research and the Roles of the Included Publications

This chapter briefly describes the choice of the social care sector as the target population. Next, it outlines the state of research on employee well-being, and the direct and indirect relationships between leadership and employee well-being. It then examines antecedents of leadership, and discusses current understanding of the effects of different intervention types on enhancing employee well-being. For all outlined research needs, the roles of the publications of this work are outlined. Finally, this section provides an overview of current understanding of the influencing factors identified through research on leadership and employee well-being.

2.1 The Social Care Sector: a Stressed Workforce

Last year, the social care sector had the highest sickness rates among all industrial sectors in Germany (Brenscheidt et al., 2022). This is not a recent trend but instead can be traced to the past decade and even earlier (Kordt, 2014a; Marschall et al., 2019). Given the background of high skill shortage in this industrial sector, these sickness rates have enormous importance. In childcare, 20,500 positions remained vacant in 2022 (Hickmann & Koneberg, 2022). High job demands (e.g., workload, work pressure, work-family conflict and emotional demands) and insufficient job resources (e.g, decision latitude, leadership, financial rewards and development opportunities) prevent the workforce from maintaining sufficient energy and motivation, and lead to a risk of inadequate detachment from work and intensification of work (McVicar, 2016; Stein, Schümann, & Vincent-Höper, 2021). Thus, the childcare sector critically requires improvements in workplace well-being enhancement; however, this topic has rarely been studied. Therefore, this work focuses on this sector in two of the three publications.

2.2 The Concept of Employee Well-Being

Employee well-being has many different “faces”, and thus has been conceptualized through multifaceted approaches (Danna & Griffin, 1999; Diener & Seligman, 2004; Ryff, 1989; Salanova et al., 2014; Warr, 1990; Wright et al., 2017). Some approaches have used a polar axis model to categorize different well-being components (e.g., Salanova et al., 2014; Warr, 1990), whereas others have differentiated between broader and more narrow well-being (e.g., Danna & Griffin, 1999; Wright et al., 2017). While research in previous decades focused on examining relationships between various variables (e.g., antecedents and consequences) and employee well-

being (e.g., Danna & Griffin, 1999), current research focuses more on the manipulation of well-being and the identifaction of influence or context factors (e.g., Fox et al., 2022; Nielsen et al., 2017). Employee well-being interventions can be approached in two ways: (1) at the level of the individual who wants or needs enhanced well-being or (2) at the level of an external entity, such as other people or conditions. Most approaches targeting employee well-being in the last 25 years focused on resource enhancement as intervention content and reducing pathogenic states as outcome measures (Burgess et al., 2020). This work focuses on the influence of leadership on employee well-being.

2.3 Mechanisms Mediating the Relationship Between Leadership and Employee Well-Being

Research on leadership and employee well-being has exploded in recent decades (Vincent-Höper et al., 2017), and the relationship between the two variables has been well-established in serveral reviews and meta-analyses (e.g., Montano et al., 2017; Skakon et al., 2010). Leadership has been identified to influence employee well-being through both direct and indirect routes (i.e., through influencing employees' work characteristics) (Gregersen et al., 2011; Vincent-Höper et al., 2017; Wegge et al., 2014).

The leadership style of transformational leadership (TFL; Avolio & Bass, 2004) has received particular attention. TFL has been suggested to consist of four dimensions: idealized influence, inspirational motivation, intellectual stimulation and individual consideration (Avolio & Bass, 2004). This leadership style remains until now the most influencial in the leadership landscape (K. A. Arnold, 2017). A multitude of studies have indicated that TFL is both directly and indirectly associated with employee well-being (overview in Arnold, 2017), and various work characteristics have been identified to be mediators that hinder or support employees' well-being at many organizational levels. For example, whereas Arnold et al. (2007) identified meaningful work as an important mediator in the TFL-well-being relationship, Nielsen and Munir (2009) have indicated that personal self-efficacy has a mediating role. In addition, an organizational sense of community (McKee et al., 2011) and social support (Nielsen & Daniels, 2012) are examples of identified mediators among many other reported examples. However, the relative importance of these mediators (i.e., whether meaningful work is a more relevant mediating work characteristic than a good sense of community) could not be determined. Thus, the theoretical and practical importance of all identified indirect mechanisms through which TFL

influences employee well-being remained uncertain. Thus, research had revealed *how* but not *how best* to enhance employee well-being indirectly through TFL. Consequently, researchers called for simultaneous measurement of indirect ways through which leaders influence employee well-being (K. A. Arnold, 2017). The first publication in this dissertation is aimed at answering this call.

2.4 Organizational Antecedents of Leadership

Research on leadership often examines *specific* leadership constructs that pertain to *specific* facets of general leadership. When focusing on the outcome of employee well-being, health-oriented leadership measures have been developed to account for the health-specific behaviors that leaders show and are preferred over general leadership measures (e.g., Gurt et al., 2011). The health-oriented leadership concept described by Franke et al. (2014) uses three dimensions of leadership to measure leaders' health-oriented values, awareness of followers' health and health-oriented behaviors. This concept has been shown to be associated with improved employee well-being and reduced strain (e.g., Hauff et al., 2022; Krick, Felfe, & Pischel, 2022; Vonderlin et al., 2021).

However, the optimal preconditions for leaders have scarcely been researched (Alilyyani et al., 2018; Inceoglu et al., 2021). Several personal and organizational antecedents have been identified to encourage either abusive and aggressive leadership behavior (e.g., perceived competitiveness, organizational context factors; Ng et al., 2021; Sharma, 2018), or supportive leadership (e.g., personality, leadership skills, perceived organizational support, individual differences; Paustian-Underdahl et al., 2013; Shanock & Eisenberger, 2006; Tuncdogan et al., 2017).

The preconditions that are necessary for leaders to show health-oriented behaviors are only very slowly beginning to be analyzed. Arnold and Rigotti (2020) have identified delegation, autonomy and social support as relevant antecedents to health-oriented leadership at the task-related and relational level, whereas Klug et al. (2022) and Kaluza and Junker (2022) have identified health-oriented self-leadership of leaders as a personal antecedent. And whereas the organizational context frames the leadership play field and thus the borders within which leaders can perform (Oc, 2018), the organizational level has rarely been considered as a precondition for health-oriented leadership. However, it should be analyzed to enhance employee well-being,

because organizational factors influence the work environment in which health-oriented leaders work and act (Nielsen et al., 2017). Ideally, these antecedents should be facet specific; i.e., *health-oriented* organizational antecedents should precede *health-oriented* leadership in influencing employee well-being to achieve higher congruence of organizational needs and leadership behaviors (Biron et al., 2018). Krick et al. (2022), in one of the few examples examining organizational level antecedents, have found that health-oriented HRM strategies are a valuable precondition to health-oriented leadership.

OHC (Zweber et al., 2016) is a facet-specific climate measure reflecting perceived organizational values, priorities and processes regarding employee health (Zohar & Luria, 2005; Zweber et al., 2015). It is largely decided by senior management and conveyed to the organization at large by (health-oriented) leadership (Yulita et al., 2017). OHC has sometimes been conceptualized as a contextual moderator (e.g., Kim et al., 2022; Loh et al., 2018), and, when OHC has been examined as a predictor, primarily work characteristics have been researched as mediators (Loh et al., 2019). First research works have examined this climate measure in relation to health-oriented leadership and found a positive (predictive) relationship between these two variables (Biron et al., 2018; Kaluza et al., 2020; Yulita et al., 2017). The second publication in this work extends this line of research by suggesting that OHC is an organizational antecedent of health-oriented leadership.

2.5 Effective Leadership Interventions

As stated above, interventions aimed at modifying individuals' behavior to increase their well-being have been extensively developed. Their effectiveness is good, albeit very short term. Beyond 6 months after an intervention, person-centered occupational health interventions have not been demonstrated to be effective (de Wijn & van der Doef, 2022). Another potentially problematic effect of such interventions is ceiling effects, wherein the skill set of the target population for well-being enhancement cannot be improved any further (Hammer et al., 2019). Thus, researchers have called for organizational health interventions (Nielsen, Randall, et al., 2010) – defined as those involving the organization, the design and the management of work (Nielsen, 2013) – to enhance employee well-being. These types of interventions have been reported to show favorable long-term effectiveness (de Wijn & van der Doef, 2022).

Organizational health interventions often place great importance on the level of line managers (Christensen et al., 2019; Dimoff & Kelloway, 2017). Because they are positioned between senior management and employees, they can function as a mouthpiece of the organization, and translate and implement the policies and processes designed at the top management level (Nielsen, 2017). They are also responsible for prioritizing an intervention over other obligations; therefore, they are important players in the successful implementation of organizational interventions (Nielsen, 2017). Consequently, organizational health interventions should at least involve, if not focus on, leaders of organizations to ensure intervention success. Although various organizational health interventions have now been tested for their effectiveness (Dannheim et al., 2021; Stuber et al., 2021), those studies had not yet been published at the start of this dissertation work. The third publication in this dissertation thus focuses on leadership training to enhance employee well-being by evaluating a supportive leadership intervention through a longitudinal cluster-randomized controlled field trial in childcare centers.

Problematically, evaluated organizational approaches are often found to be less effective than individual approaches (de Wijn & van der Doef, 2022; Roodbari et al., 2022). In addition to measurement difficulties in evaluating such interventions, moderators may also influence intervention effectiveness. Thus, interventions might be more effective for some people and less effective for others (Nielsen & Miraglia, 2017). This aspect is considered in the third publication.

2.6 Current State of Research on Leadership and Employee Well-Being

Figure 2 provides an overview over the *current* state of research on leadership and employee well-being described in the preceding section. Several influencing factors that have not been described herein and are not part of this work are included, to comprehensively illustrate the current state of research on leadership and employee well-being. In the next section, the publications follow.

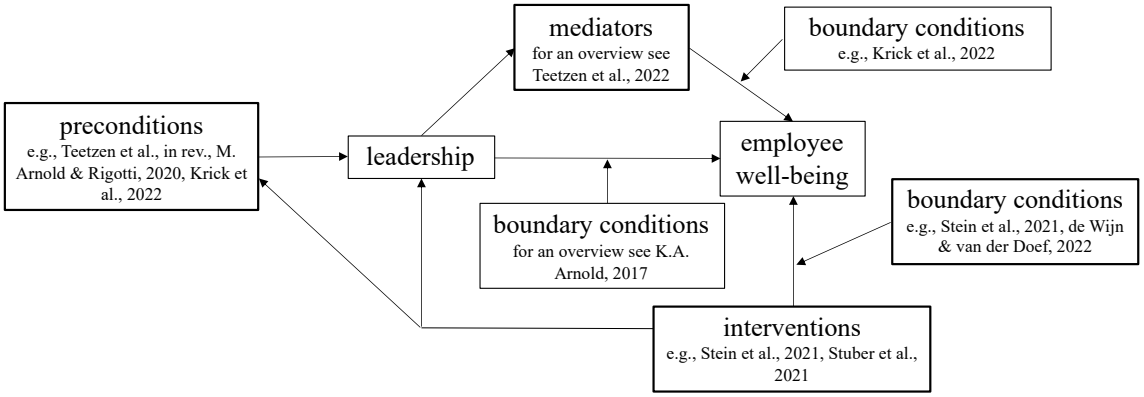

Figure 2. Overview of current research on influence factors regarding leadership and employee well-being.

Publications

3.1 The first publication of this work

Review

The Mediating Effects of Work Characteristics on the Relationship between Transformational Leadership and Employee Well-Being: A Meta-Analytic Investigation

Friederike Teetzen [1]*, Paul-Christian Bürkner [2], Sabine Gregersen [3] and Sylvie Vincent-Höper [1]

[1] Department of Work & Organizational Psychology, University of Hamburg; Hamburg, 20146, Germany; sylvie.vincent-hoeper@uni-hamburg.de
[2] Stuttgart Center for Simulation Science; paul-christian.buerkner@simtech.uni-stuttgart.de
[3] Institution for Statutory Accident Insurance and Prevention in the Health and Welfare Services, Hamburg, 22089, Germany; sabine.gregersen@bgw-online.de
* Correspondence: friederike.teetzen@uni-hamburg.de

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Abstract: Evidence points to an indirect relationship between transformational leadership (TFL) and employee well-being, and numerous work characteristics have been identified as mediators. However, the relative mediating effect of different types of job resources and job demands on the TFL–well-being relationship remains unclear, rendering it impossible to determine which ones are the most influential. This study aims to provide a comprehensive analysis of the relative mediation potential of different work characteristics in the TFL–well-being relationship in multiple three-level meta-analytical structural equation models of 243 samples. Based on the JD–R Model, this study extends this theoretical framework by suggesting TFL as a predisposing variable that influences both job resources and job demands, leading to changes in indicators of both positive and negative employee well-being. The results show that, while all the examined job resources and demands mediated the TFL–well-being relationship, organizational resources were identified as the strongest mediators. Furthermore, job demands had a strong mediating effect on the relationship between TFL and negative well-being, while job resources more strongly mediated TFL and positive well-being. We present a differentiated picture of how transformational leaders can influence their employees' well-being at the workplace, providing valuable knowledge for future research and practice.

Keywords: transformational leadership; work characteristics; job demands; job resources; meta-analysis; employee well-being

1. Introduction

Knowledge regarding the maintenance of well-being in the workforce is essential for organizations in times of skill shortage, high burnout rates and

aging staff. Leadership is suggested to have a notable impact on these processes [1,2]. In this regard, the literature has long associated transformational leadership (TFL) with greater levels of positive employee well-being and lower levels of negative employee well-being [1,3]. However, the argument that the TFL framework "does little to explain what exactly it is that underpins perceptions of a leader's transformational power" [4] (p. 17) has escalated [5]. Thus, more recent research indicates an indirect influence of TFL on employees' well-being by shaping their work characteristics [6,7].

Job demands and job resources as work characteristics are highly susceptible to influences by leaders—on the one hand, by actively amending the work environment [8] and, on the other hand, by influencing how employees view their work environment [4,9]. Accordingly, research has identified various work characteristics to mediate the TFL–well-being relationship [1,10]. However, no attempt has been made to integrate all these mediators to gain knowledge regarding which one is the most relevant. This knowledge, however, would guide researchers and practitioners in understanding how TFL leaders can best influence their employees' well-being. In accordance with that, several recent reviews have called for an examination of the interrelationship of different mediators in the TFL–well-being relationship [1,10]. While a comprehensive simultaneous examination of job resources and job demands in their mediation potential of the TFL–employee well-being relationship is still lacking, the same is true for a differential analysis of their simultaneous influence on both positive and negative indicators of well-being. This calls for further investigation [9,10]. Additionally, research has mostly examined job resources as mediators, leaving the role of job demands widely unexplored [5,10].

In this study, we aim to answer these research calls by examining the relative mediating potential of various types of job resources (personal, relational, task-related and organizational) and job demands (challenge and hindrance demands) in the TFL–well-being relationship in a meta-analytical, multilevel investigation. We used the Job Demands–Resources Model (JD–R Model, [11]) as the theoretical framework for our model; however, we extended it. We (1) added the leadership variable as a predictor of work characteristics [9,12], (2) integrated different types of job demands and job resources and (3) differentiated among four indicators of employee well-being (affective–motivational, pleased–relaxed, depressed–exhaustive and irritated–distressed).

By integrating several job demands and job resources and various indicators of well-being in one model, we advance the disclosure of the mechanisms by which TFL unfolds and provide insights into the relative importance of various work characteristics for the relationship between TFL and different facets of well-being. Our study thereby contributes beyond recent reviews and meta-analyses examining the TFL–well-being relationship [1,10,13,14] and provides valuable information for future research and practice. It becomes clearer which resources and demands to focus on and implement and which ones to dispose of when aiming to impact employee well-being in the context of leadership. In doing so, we give organizations the opportunity to develop effective interventions in terms of shaping work characteristics for employees through the leader and maintaining or improving their well-being.

1.1. Transformational Leadership and Employee Well-Being

TFL [15] is the most widely researched leadership concept [16] and emphasizes change and personal development [17]. TFL is suggested to consist of four dimensions, namely idealized influence, inspirational motivation, intellectual stimulation, and individual consideration [15].

In recent years, the concept of TFL has received considerable conceptual and measurement critique, including a lack of theoretical grounding, insufficient specification of causal processes and highly interrelated subscales [18–20]. However, although refinement of the conceptual framework of TFL seems undoubtedly necessary, a recent meta-analysis by Hoch et al. [16] showed that only one other leadership concept (servant leadership) exhibited incremental variance over TFL for a few behavioral and attitudinal employee outcomes among various other leadership concepts (e.g., authentic and ethical leadership). Thus, TFL can still be regarded as a very influential and valuable leadership concept with high significance for employee outcomes.

Although TFL seems to have a predominantly positive effect on employees' well-being at the workplace [2], a few studies also find evidence for an exhaustive component of this leadership style (e.g., [21–23]). While most TFL behaviors pertain to the followers' needs and support the individual, there seem to be some elements of TFL that can appear overly challenging for employees (i.e., fostering growth, encouraging new ways of thinking, and welcoming the unknown) [21,24]. This may lead employees to burden themselves with an excessive number of job demands or may reduce their job resources, in turn hampering their well-being [21,22]. To shed light on the mechanisms by which TFL leaders convey their impact, we focus on this leadership concept in our analysis.

Well-being is a multifaceted construct with many existing conceptualizations of different facets [25,26]. We applied the taxonomy suggested by Salanova et al. [27], which is based on the circumplex model of well-being [28,29] and differentiates between four indicators of well-being: enthusiastic, relaxed, fatigued and tense. In our study, we adopted this taxonomy but renamed the different indicators to be more descriptive about their underlying subcomponents: we integrated affective–motivational well-being (formerly 'enthusiastic', e.g., work engagement, enthusiasm) and pleased–relaxed well-being (formerly 'relaxed', e.g., content, calm, relaxed) as two indicators of positive well-being and depressed–exhausted well-being (formerly 'fatigued', e.g., depression, burnout, depersonalization) and irritated–distressed well-being (formerly 'tense', e.g., stressed, irritated) as two indicators of negative well-being.

Theoretically, TFL should contribute to employee well-being by enhancing personal growth and self-esteem through motivational processes inspired by TFL behaviors, such as emphasizing collective identity, referencing followers' worth and efficacy, expressing confidence in the team and providing ideological visions [30–32]. Additionally, TFL leaders provide support and individualized coaching through their actions, thereby decreasing emotional distress and preventing negative mental health states [24,33,34]. Since theory and a compelling amount of evidence examining unidimensional TFL indicate a positive relationship between TFL and employee well-being, we expect the following:

Hypothesis 1 (H1). *TFL is positively related to affective–motivational well-being (1a) and pleased–relaxed well-being (1b) and negatively related to depressed–exhaustive well-being (1c) and irritated–distressed well-being (1d).*

This hypothesis focuses on the direct influence of TFL on employee well-being. However, there are multiple ways by which leaders influence the work environment of employees (e.g., by assigning certain tasks), which, in turn, influence employee well-being. In our research, we thus applied a modified version of the JD–R Model as our theoretical framework: while the original JD–R Model subsumes leadership with other work-related resources under the category "job resources" (e.g., [35,36]), we believe that leaders have a particularly strong influence on the work characteristics of their employees and contribute to a favorably perceived work environment [12,37,38]. To investigate the indirect influence of leadership on employee well-being, we amplified the JD–R Model and suggest leadership as a prerequisite to the JD–R Model, thus examining TFL as an upstream variable in the model (see also [9,12]).

1.2. The Job Resources Model

According to the JD–R Model, job resources refer to those "aspects of the job that may do any of the following: (a) be functional in achieving work goals, (b) reduce job demands and the associated physiological and psychological costs, (c) stimulate personal growth and development" [11] (p. 501). As stated by the IGLO framework of Nielsen et al. [39], job resources can be differentiated into different categories: Individual, Group, Leadership and Organizational resources. We oriented ourselves to this framework and integrated individual (e.g., psychological capital, empowerment), group (e.g., social support of colleagues, community) and organizational resources (e.g., fairness perceptions of the organization, organizational support) in our analyses, renaming individual and group resources as personal and relational resources. We decided to drop the 'leadership resources' category suggested in the framework because these resources were conceptually and empirically very closely related to TFL ($r = 0.57$) and were expected to be confounded with TFL. In contrast to the IGLO framework, we did, however, add

an additional category of task-related resources because we wanted to differentiate between job resources relevant to the individual workplace and task in a narrower sense (e.g., autonomy, job control, meaningful work) and job resources pertaining to the organization and the work environment in a broader sense (e.g., fairness, organizational culture, organizational support).

The TFL style entails a multitude of leadership behaviors that promote various types of employee job resources [40]. For example, by intellectually stimulating their employees, assigning tasks based on the employee's strengths and capabilities and inspiring "out-of-the-box thinking", TFL leaders encourage employees to create new paths, thereby promoting personal resources, such as occupational self-efficacy and empowerment [5,41]. By deciding on the degree of autonomy, predictability and control employees have over the fulfillment of their work tasks, TFL leaders greatly influence their employees' task-related resources [1,42]. Moreover, they provide an impression of optimism and workplace safety for their employees through clear and transparent (one-on-one) communication and consideration, thereby enhancing collective identity, social support, and a common goal (relational resources) [43–45]. Beyond that, they foster perceptions of fairness and support regarding the organization (organizational resources) [46–49]. To summarize, employees should benefit from a TFL leader by acquiring work-related resources, and, thus, a positive relationship between TFL and job resources is expected.

Furthermore, we expect job resources to be positively related to indicators of employees' positive well-being and negatively related to indicators of negative well-being. The motivational process of the JD–R Model describes a process through which job resources increase work engagement and foster personal growth (e.g., [50–52]). Other facets of positive well-being can be similarly expected to be positively influenced by job resources, as recently confirmed in a meta-analysis by Nielsen et al. [39]. In the same way job resources are positively associated with positive well-being, their absence can result in disengagement and burnout [50,53]. Thus, we expect a negative relationship between job resources and indicators of negative well-being.

According to the Conservation of Resources Theory (COR; [54]), individuals with the highest resource reservoir can best protect their well-being against harm and acquire new resources [55]. Because we assume that TFL leaders provide numerous resources for their employees, followers led by such leaders should have a substantial resource reservoir, engendering positive well-being and protecting them against negative well-being. Therefore, it is reasonable to assume that TFL leaders have a positive effect on indicators of positive well-being (e.g., [49,56,57]) and a protective effect against negative ones (e.g., [58–60]) by enhancing employees' job resources (Figure 1a).

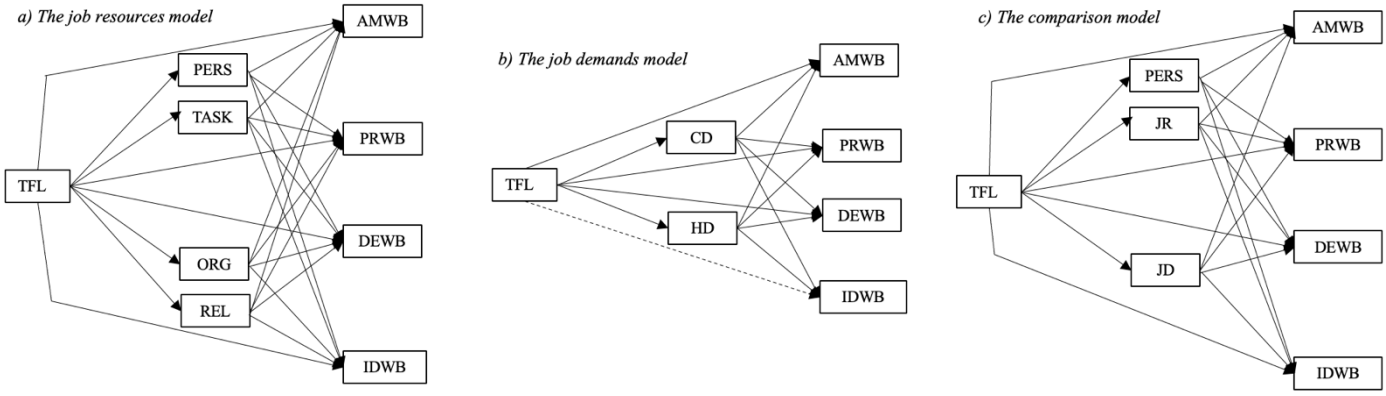

Figure 1. (**a–c**) The suggested models. Note: TFL = transformational leadership, PERS = personal resources, TASK = task-related resources, ORG = organizational resources, REL = relational resources, AMWB = affective–motivational well-being, PRWB = pleased–relaxed well-being, DEWB = depressed–exhausted well-being, IDWB = irritated–distressed well-being, JD = job demands, JR = job resources, CD = challenge demands, HD = hindrance demands.

Hypothesis 2 (H2). *The relationship between TFL and employee well-being is mediated by personal (2a), task-related (2b), relational (2c) and organizational resources (2d) (the Job Resources Model).*

1.3. The Job Demands Model

In addition to enhancing job resources, TFL behaviors have been found to reduce job demands, which are important psychosocial risk factors for employees (e.g., [61,62]). However, the picture seems to be slightly more nuanced here, and research has identified different relational patterns with different job demands. According to the challenge–hindrance–stressor framework [63], job demands can be differentiated into two categories: challenge demands and hindrance demands. Challenge demands can be regarded as demands that, although stressful, are "rewarding work experiences well worth the discomfort" [63] (p. 66). Hindrance demands "involve excessive or undesirable constraints that […] hinder an individual's ability to achieve valued goals" [63] (p. 67). TFL leaders prevent or reduce hindrance demands, such as role-related or relational conflicts, by articulating clear and concise (shared) goals and visions, transparent communication, and efforts for collaboration [64–66]. However, their high performance expectations and articulation of ambitious visions can also lead employees to increase their efforts, resulting in more challenge demands, such as time pressure or work overload [23,67]. Thus, we would expect TFL to be positively related to challenge demands and negatively related to hindrance demands.

Job demands also show a nuanced relationship with well-being. Intuitively, all job demands require energy and deplete a person and thus are positively linked to various indicators of negative well-being (e.g., anxiety, depression, and burnout) [68]. This relationship has also been identified in the health-impairment process of the JD–R Model [69] and has been demonstrated empirically many times (e.g., [50,70,71]).

The relationship between job demands and indicators of positive well-being is less clear. On the one hand, to our knowledge, work engagement is the only indicator of positive well-being tested in this context (for an overview, see [72]). On the other hand, the findings regarding this indicator are inconsistent. Part of the reason for this inconsistency might be that authors have failed to differentiate the job demands measured in challenge and hindrance demands [73]. Hindrance demands have been shown to reduce well-being and hamper motivational states [72,74], leading to a greater focus on weaknesses and negative aspects of work [75] and thereby attenuating feelings of positive well-being. We, therefore, expect a negative relationship between hindrance demands and indicators of positive well-being. Challenge demands, in contrast to hindrance demands, are said to enhance motivation and feelings of positive well-being by satisfying psychological needs [72,76,77]. Thus, we expect a positive relationship between challenge demands and indicators of positive well-being. On the whole, we assume TFL leaders shape their employees' work characteristics by reducing (hindering) job demands and providing challenges as described above, subsequently reducing stress and other indicators of negative well-being and fostering positive well-being (see Figure 1b) [5,9,78].

Hypothesis 3 (H3). *The relationship between TFL and employee well-being is mediated by challenge (3a) and hindrance demands (3b) (the Job Demands Model).*

1.4. The Relative Impact of Job Resources and Job Demands

While individual job resources and job demands have been tested as mediators in the TFL–well-being relationship, studies examining several work characteristics at the same time are still rare [1]. Only a handful of studies have investigated job resources and job demands in the TFL–well-being relationship [5,9,79,80]. Unfortunately, however, those studies only examined mediation effects regarding the relationship between TFL and indicators of negative well-being (i.e., stress, anxiety, irritation), leaving the differential effects of job resources and job demands on the relationship between TFL and positive well-

being completely unexplored. Furthermore, to our knowledge, no study has compared the mediation potential of several types of resources and demands, and, thus, their relative importance in the TFL–well-being relationship cannot be decided. We intended to fill these research gaps in two consecutive steps: first, we examined the relationship between TFL and all the indicators of well-being regarding the relative mediating impact of job resources and job demands as well as personal resources (e.g., occupational self-efficacy, empowerment, psychological capital), which we contrasted in a separate category (see Figure 1c). We refrained from subsuming personal resources under job resources in this model because, even though they are job-related, these resources have a strong individual component, which we wanted to contrast to other types of resources that are more in the scope of leadership.

In a second step, we compared all the examined types of resources and demands in terms of their potential to mediate between TFL and affective–motivational well-being, pleased–relaxed well-being, depressed–exhaustive well-being and irritated–distressed well-being, respectively (Figure 2a–d). This led us to the following research questions:

Research Question 1: *What is the relative mediating effect of personal resources, job resources and job demands on the TFL–well-being relationship? (the Comparison Model)*

Research Question 2: *What is the relative mediating effect of each type of resource and demand on the relationship between TFL and different indicators of well-being?*

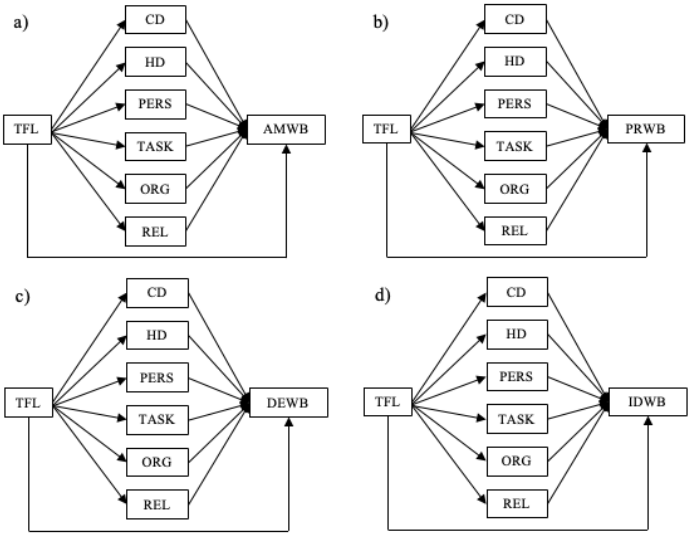

Figure 2. (**a**–**d**) Suggested mediating mechanisms of all types of job resources and demands in the relationship between TFL and one indicator of well-being at a time. Note: TFL = transformational leadership, CD = challenge demands, HD = hindrance demands, PERS = personal resources, TASK = task-related resources, ORG = organizational resources, REL = relational resources, AMWB = affective–motivational well-being, PRWB = pleased–relaxed well-being, DEWB = depressed–exhausted well-being, IDWB = irritated–distressed well-being.

2. Materials and Methods

2.1. Literature Search and Eligibility Criteria

To find all relevant studies in the abovementioned field, an extensive search of the literature through May 2020 was conducted. Various electronic databases, search engines and the internet were searched for various terms related to transformational leadership and well-being, burnout, work engagement, mental

health, and psychological complaints (e.g., PsychINFO, MEDLINE, PsychArticles, The Cochrane Library, Academic Search Premier, Google Scholar). After these electronic searches, we also searched reference lists of relevant articles and contacted various authors of important works on TFL to ask for additional and/or unpublished literature. A detailed search history can be found in the Supplementary Materials (Table S1).

The identified works were screened based on the following eligibility criteria: studies had to (1) be an empirical field study, (2) measure TFL and an indicator of positive or negative well-being, (3) include participants who worked at least 20 h per week, (4) measure TFL from the perspective of followers and (5) include all necessary information for calculations. Applying these inclusion criteria, 203 studies with 243 samples were included in this meta-analytic investigation (N = 195.064). Figure 3 displays the search process. A Prisma checklist can be found in Table S2.

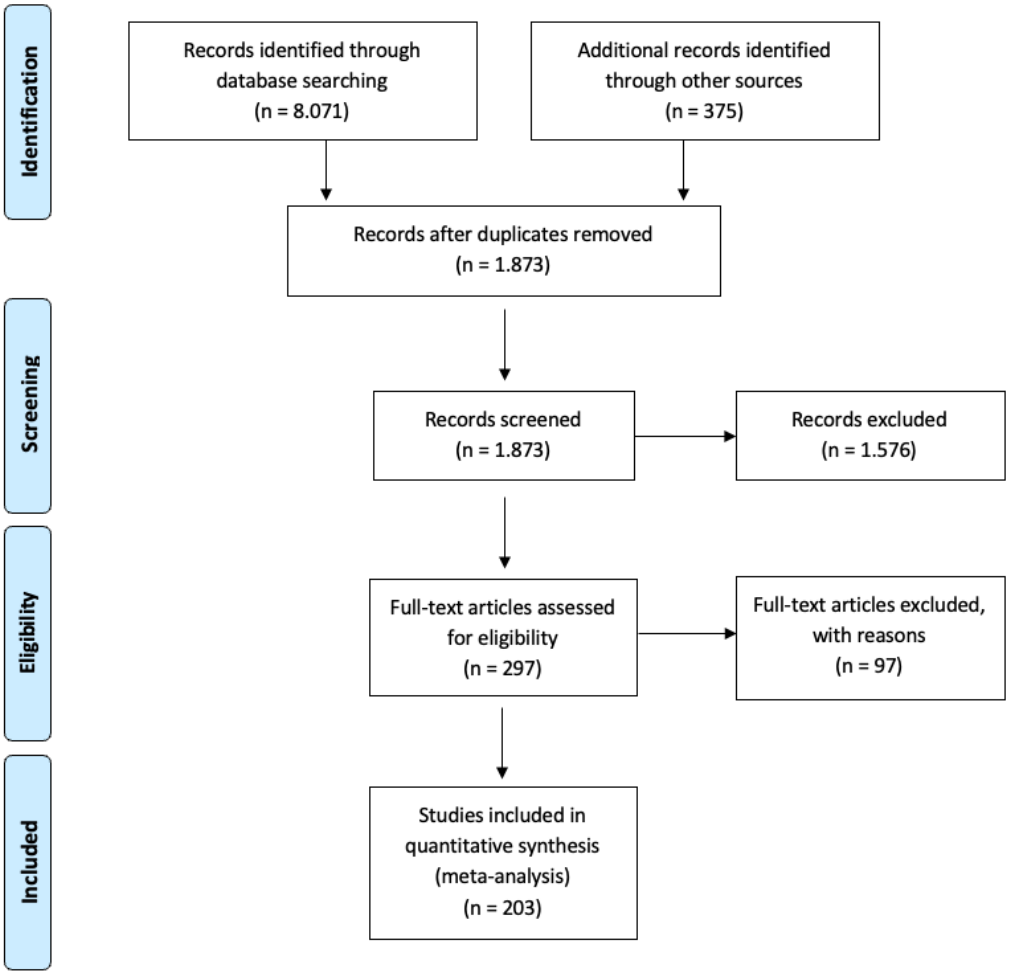

Figure 3. Flow chart of literature inclusion.

2.2. Coding Procedure and Included Variables

Two independently working psychological researchers extracted the relevant data from the studies with an interrater agreement of 99.97%. All disagreements or uncertainties were discussed and resolved by consensus. When only subscale scores of variables were reported, we calculated mean scores across these subscales. A coding manual can be viewed in Table S3.

All variables that were examined in this study were cross-sectional and rated from the followers' perspective. Next to sample characteristics (e.g., industry, continent, gender) we coded leadership

measurements, well-being measurements and the measurements of work characteristics. Study quality was assessed by the impact factor of the journal the primary study was published in.

2.2.1. Transformational Leadership

Measurements had to reflect the core dimensions of TFL [15]. According to van Knippenberg and Sitkin [19], the subscales of existing measurements of TFL overlap substantially, so we decided on one overall score for TFL. Further analysis of the subscales was also not possible because only 24 of 243 samples (10%) reported individual dimensions. TFL was mostly measured by the Multifactor-Leadership Questionnaire (MLQ) [81] (62%) but also by the Global Transformational Leadership Scale (GTL) [82] (13%), the Transformational Leadership Inventory (TLI) [83] (9%), the Transformational Leadership Scale (TLS) [65] (7%) and other measurements of TFL (10%). We tested in moderator analyses whether it is reasonable to treat all instruments equally. Since the instruments did not vary substantially in their relationships with the other variables, we decided not to differentiate between them (see also Section 3.4).

2.2.2. Indicators of Well-Being

As described above, we differentiated the construct of well-being into four indicators of well-being. To supply the reader with even more detail, we measured subcomponents of the indicators wherever possible and sensible.

Since the leader–employee relationship is a rather volatile one [84], we regard it as rather unlikely that leaders have influence on very general and trait-like well-being (i.e., confidence with life). Thus, in accordance with our research question, we examined domain-specific (i.e., job-related) state well-being [85], excluding studies that used very trait-like measurements (i.e., "in general", "regarding my life"). Note that we also refrained from integrating job satisfaction as an indicator of well-being because correlations between job satisfaction and leadership are often artificially high (e.g., $\rho = 0.58$, [86]) due to confounding of the two concepts in items of job satisfaction scales (e.g., "How satisfied are you with your immediate boss?", Job Satisfaction Scale, [87]). Because this circumstance would have artificially increased the correlations of leadership and employee well-being in our meta-analysis, we chose to exclude job satisfaction.

Indicators of Positive Well-Being

Affective–motivational well-being. Positive affective states describe feelings of being "enthusiastic, active and alert" [88] (p. 1063). Thus, constructs such as positive affect, energy, enthusiasm, flow, alertness, thriving and activity were elements of this indicator. A widely used element of this indicator was work engagement. Work engagement can be defined as a "positive affective–motivational state of fulfillment that is characterized by vigor, dedication and absorption" [89]. Examples of instruments used for this indicator are the UWES [89], the PANAS [88] and the JAWS [90]. Positive affect and work engagement constitute subcomponents of this indicator. The alpha values were $\alpha = 0.71–0.98$ for the whole indicator and $\alpha = 0.71–0.98$ and $\alpha = 0.82–0.97$ for the subcomponents work engagement and positive affect, respectively.

Pleased–relaxed well-being. This indicator describes a content and relaxed state in which one feels rested and confident about one's own skills [27]. Examples of this indicator are (subjective) well-being measured by the WHO-5 [91] or the GHQ [92] ($\alpha = 0.67–0.98$).

Indicators of Negative Well-Being

Depressed–exhausted well-being. Part of this indicator is depressed states as well as the concept of burnout. Burnout is defined as a syndrome of "energy depletion and dysfunctional attitudes toward the workplace" [93] (p. 4). It is typically represented by three dimensions: emotional exhaustion, depersonalization and reduced personal accomplishment. Whenever possible, we entered all three subscales separately to obtain as much information as possible. Instrument examples are the MBI [94], the GNBI [95] and the burnout subscale of the COPSOQ [96]. Subcomponents of this indicator were emotional

exhaustion (α = 0.70–0.98), depersonalization (α = 0.70–0.98), reduced personal accomplishment (α = 0.70–0.98), depression (α = 0.87–0.96) and burnout (when measured as one dimension) (α = 0.80–0.97). The alpha for the whole indicator was α = 0.70–0.98.

Irritated–distressed well-being. This indicator describes anxious, tense and/or angry states mainly triggered by the job [27]. Subcomponents were job stress; negative affect, which describes "aversive mood states like anger, contempt, disgust, guilt, fear and nervousness" [88] (p. 1063) and irritation, which refers to "a state of mental impairment resulting from a perceived goal discrepancy" [97] (p. 198). Instrument examples used for this indicator are the PANAS [88], the DASS [98] and the PSS [99]. The following alpha values were obtained: the whole indicator (α = 0.80–0.97), irritation (α = 0.82–0.97), job stress (α = 0.80–0.97) and negative affect (α = 0.87–0.97).

2.2.3. Work Characteristics

As mediators, we integrated various types of job resources and job demands in the analyses to cover the characteristics of a workplace most completely. We integrated work characteristics only when they were reported in conjunction with TFL and indicators of well-being in one study. We did not examine additional studies focusing on work characteristics in other contexts to avoid introducing more heterogeneity into the analyses.

Job resources. Job resources are work features that stimulate personal growth and achievement [39]. In accordance with the IGLO framework [39], we differentiated personal, relational, and organizational resources and added the category task-related resources. Personal resources subsumed all measurements that pertained to individual development at the workplace and included resources such as self-efficacy, empowerment, innovative behavior, psychological capital, intrinsic motivation, professional ambition, and competence. Instrument examples are the Occupational Self-Efficacy Scale [100], which was used quite often in this category. Task-related resources concern the conditions of the work tasks and comprise, for example, job control, autonomy, predictability, clarity, and meaningfulness, which were often represented by various subscales of the COPSOQ [96]. Relational resources described social relationships and comprised resources such as social support, community, cooperation, cohesion, social interaction, and teamwork and were represented, for example, by a social support scale by de Jonge et al. [101]. Organizational resources pertained to the perceptions of organizational core values and comprised variables such as fairness, values, justice, organizational support, structural empowerment and climate, represented by, for example, the fairness and value subscales of the Areas Of Worklife Survey [102]. Alpha values were as follows: personal (α = 0.69–0.98), task-related (α = 0.59–0.95), relational (α = 0.69–0.93) and organizational resources (α = 0.66–0.96).

Job demands. Job demands refer to aspects of work that require effort of some type and are, therefore, linked to psychological or physical costs or limitations [69]. We differentiated between challenge demands and hindrance demands [77]. Challenge demands comprised, for example, workload, work intensity and time pressure, with an instrument example of a subscale of the ISTA [103]. Hindrance demands were understood as, for example, role conflicts, role ambiguity, bullying and emotional demands as measured by the Role Conflict and Ambiguity Scale [104]. Alphas were as follows: challenge demands (α = 0.56–0.90) and hindrance demands (α = 0.47–0.95).

A detailed description on each integrated study can be viewed in Table S4.

2.3. Meta-Analytic Approach

Statistical analyses were computed with the statistical freeware R [105] and the packages metafor [106], metaSEM [107], lavaan [108] and msemtools [109]. The R Markdowns can be viewed at https://osf.io/c59q2/ (last accessed at 26/02/2022).

2.3.1. Meta-Analyses

All studies reported correlation coefficients or standardized beta-coefficients as effect sizes. In the first step, estimates were corrected for measurement error by a double-attenuation correction of the estimates by reliability scores given in the individual studies [110]. Where no reliability score was provided, we applied an alpha value of $\alpha = 0.90$, which can be regarded as conservative since it is unlikely to change the original values. After the analyses, estimates were converted back to correlation coefficients.

To test our proposed research models, we first conducted individual meta-analyses for all relevant individual bivariate relationships and several subcomponents of well-being by calculating three-level random-effects meta-analyses with the meta3 function of the metaSEM approach of Cheung [111]. This approach models the sampling variation of the effect sizes at Level 1, the variation within studies at Level 2 and the variation between studies at Level 3 [111]. We thereby accounted for the dependencies of several effect sizes per well-being outcome obtained from the same sample and, thus, the multilevel structure of our data [112,113]. To weigh the effect sizes, we employed the inverse of the within-study sampling variance [114]. We used correlations as effect sizes in the meta-analyses instead of Fisher's z values for consistency with the meta-analytical structural equation modeling that followed in a next step, which required the use of the correlational metric and the associated variances and covariances [115,116].

We checked for outliers via boxplots and excluded 106 of 2501 (4%) correlations that were identified as outside the whiskers of the boxplot in a second dataset. Since the results of the calculations with this second dataset do not differ significantly from the original ones with all effect sizes, we report the results with the complete dataset in this article. The analyses without outliers can be viewed in R Markdown at (last accessed at 26/02/2022).

2.3.2. Meta-Analytic Structural Equation Modeling

After performing individual meta-analyses, we applied meta-analytic structural equation modeling (MASEM) to estimate the theoretically suggested mediating mechanisms [115]. The advantage of the TSSEM (two-stage structural equation modeling) approach of Cheung, compared with univariate approaches, is that it pools the individual sample correlation matrices and then computes a pooled correlation matrix with a corresponding sampling variance–covariance matrix. Thus, it integrates more information and increases the validity of the proposed relationship estimates [115]. Moreover, it does not depend on finding a common sample size for the combined correlations (e.g., harmonic mean) and results in a reduced confirmation bias compared with structural equation modeling of primary data [115].

Given the multilevel structure of our data, we did not apply the first step of the TSSEM approach suggested by Cheung [115] but instead applied a multilevel approach by Wilson et al. [116]. This prevents the underestimation of the variances of dependent effect sizes [116]. Wilson's approach first fits a three-level random-effects model, which, apart from small numerical differences, entails the meta-analytic correlations calculated in the three-level meta-analyses described above. The pooled correlation matrix is then created based on these correlations. In a subsequent step, this pooled correlation matrix is handed over to the second step of the TSSEM approach to estimate the SEM using weighed least squares (WLS) estimation.

2.3.3. Moderator Analyses

Three-level meta-analyses provide the opportunity to inspect several heterogeneity statistics. Due to the differentiation of three levels, besides a Q-statistic, the amounts of variation in Level 2 ($\tau_{(2)}^2$) and in Level 3 ($\tau_{(3)}^2$) are given next to respective proportions of total variation within ($I^2_{(2)}$) and between studies ($I^2_{(3)}$). According to Cleophas and Zwinderman [117], an $I^2_{(3)}$ above 0.50 indicates high heterogeneity. Thus, for between-study heterogeneity above 50%, we inspected several moderators exploratorily at the study level: study quality, publication status, year of publication, continent of the sample, industry of the sample and the measurement of TFL. The analyses were conducted with the R package msemtools [109].

2.3.4. Publication Bias

Several measures were taken to test for publication bias. The relevant analyses can be viewed in File S1. The visual inspection of funnel plots [118] and the application of Egger's test [119] indicated some missing studies for the relationships of TFL with positive affect and emotional exhaustion, whereby Egger's tests were only significant at the 90% threshold. We subsequently applied trim and fill analyses [120] to simplified versions of our models (two- instead of three-level meta-analyses) due to a missing equivalent method for three-level data. They revealed two missing studies for positive affect. However, the null hypothesis of no missing studies could not be rejected. The trim and fill for emotional exhaustion did not suggest any additional studies. Thus, the influence of publication bias can be regarded as neglectable. All other funnel plots and Egger's tests can be viewed in R Markdown.

3. Results

3.1. Meta-Analytic Correlations between the Variables

The analyses included 2501 correlations between TFL, work characteristics and different indicators of well-being across 53 individual three-level meta-analyses. The interested reader finds all three-level meta-analyses on TFL and the indicators of well-being, including various subcomponents of well-being, and the ones of the mediators and TFL and well-being in Appendix A.

To sum up the results, TFL was significantly and substantially associated with all indicators of positive and negative well-being; thus, we focus on those relationships that are relevant for our hypotheses. The strongest positive relationship was found for TFL and affective–motivational well-being ($r = 0.39$), while it was only slightly lower for TFL and pleased–relaxed well-being ($r = 0.34$). This confirms H1a and H1b. TFL was negatively associated with depressed–exhaustive well-being ($r = -0.28$), irritated–distressed well-being ($r = -0.20$) and psychosomatic complaints ($r = -0.21$), confirming H1c, H1d and H1e. Forest plots regarding these meta-analyses can be viewed at [1] (last accessed at 26/02/2022).

Regarding the meta-analyses on the mediators and TFL and well-being, except for one exception, the relationships were all in the expected direction as described in the theoretical background. The relationships of challenge demands with TFL and the indicators of positive well-being, which were expected to be positive, were found to be negative. All the explored relationships were significant and of small to moderate size. TFL was negatively associated with job demands (challenge: $r = -0.22$; hindrance: $r = -0.29$), while it was positively associated with all job resources (organizational: $r = 0.51$, relational: $r = 0.40$, task-related: $r = 0.38$, personal: $r = 0.27$).

3.2. Structural Equation Models

To test our hypotheses and research questions, we analyzed several meta-analytical SEMs. The full correlation matrices used for the SEM can be found in the Supplementary Materials (Table S5).

The Job Resources Model tested the mediation effect of personal resources (H2a), task-related resources (H2b), organizational resources (H2c) and relational resources (H2d) on the TFL–well-being relationship. Figure 4a shows the parameter estimates of this model, while Table 1 shows the indirect effects. The fit indices of the model indicated good fit (RMSEA = 0.01, SRMR = 0.10, CFI = 0.95). TFL was positively related to all job resources (personal resources: $\beta = 0.30$, task-related resources: $\beta = 0.42$, organizational resources: $\beta = 0.56$, relational resources: $\beta = 0.43$), while these were, in turn, positively related to the indicators of positive well-being ($\beta = 0.22$–0.47) and negatively related to the indicators of negative well-being ($\beta = -0.25$–-0.40). The indirect effects were all significant, with the weakest indirect effects for personal resources ($\beta_i = 0.07$–0.09) and the strongest ones for organizational resources ($\beta_i = 0.17$–0.26) (see Table 1). Thus, H2a–d could be confirmed.

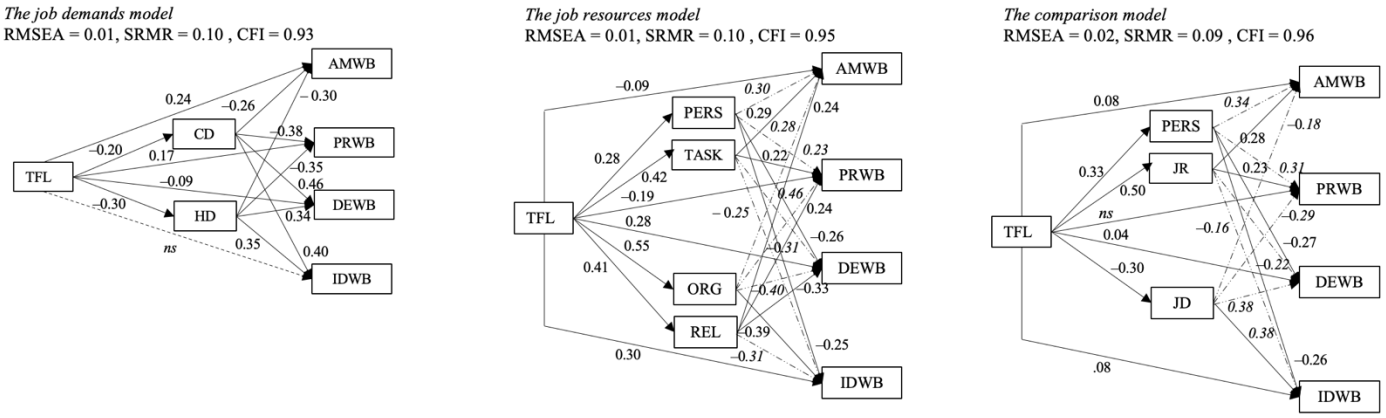

Figure 4. (**a**–**c**) Parameter estimates for the mediation effect of job resources, job demands and the Comparison Model on the TFL–well-being relationship. Note: all effect sizes are significant at $\alpha = 0.05$; for better readability of the estimate values, dotted paths correspond to values in italics; abbreviations of the variable names = see Figure 1a–c.

Table 1. Indirect effects of the Job Resources Model, the Job Demands Model and the Comparison Model.

Mediator (M)	Dependent Variable (DV)	β_1 (TFL-> M)	95%-CI	β_2 (M -> DV)	95%-CI	β_i (Indirect)	95%-CI
the Job Resources Model							
PERS	AMWB	0.30	[0.27, 0.33]	0.31	[0.28, 0.35]	0.09	[0.08, 0.11]
TASK	AMWB	0.42	[0.39, 0.45]	0.29	[0.24, 0.34]	0.12	[0.10, 0.15]
ORG	AMWB	0.56	[0.52, 0.59]	0.31	[0.25, 0.36]	0.17	[0.14, 0.21]
REL	AMWB	0.43	[0.39, 0.47]	0.25	[0.19, 0.31]	0.11	[0.08, 0.14]
total effect:						0.37	[0.34, 0.39]
PERS	PRWB			0.23	[0.16, 0.29]	0.07	[0.05, 0.09]
TASK	PRWB			0.22	[0.15, 0.30]	0.09	[0.06, 0.13]
ORG	PRWB			0.47	[0.35, 0.59]	0.26	[0.19, 0.33]
REL	PRWB			0.26	[0.16, 0.35]	0.11	[0.07, 0.16]
total effect:						0.32	[0.28, 0.36]
PERS	DEWB			−0.26	[−0.30, −0.22]	−0.08	[−0.09, −0.07]
TASK	DEWB			−0.31	[−0.35, −0.28]	−0.13	[−0.15, −0.12]
ORG	DEWB			−0.39	[−0.45, −0.34]	−0.22	[−0.26, −0.18]
REL	DEWB			−0.33	[−0.38, −0.28]	−0.14	[−0.17, −0.12]
total effect:						−0.28	[−0.31, −0.26]
PERS	IDWB			−0.25	[−0.29, −0.20]	−0.07	[−0.09, −0.06]
TASK	IDWB			−0.26	[−0.30, −0.21]	−0.11	[−0.13, −0.09]
ORG	IDWB			−0.40	[−0.49, −0.32]	−0.22	[−0.28, −0.17]
REL	IDWB			−0.34	[−0.41, −0.26]	−0.15	[−0.18, −0.11]
total effect:						−0.20	[−0.23, −0.17]
the Job Demands Model							
CD	AMWB	−0.23	[−28, −0.17]	−0.26	[−0.31, −0.21]	0.06	[0.04, 0.08]
HD	AMWB	−0.30	[−0.33, −0.26]	−0.28	[−0.33, −0.23]	0.08	[0.07, 0.10]
total effect:						0.39	[0.36, 0.41]
CD	PRWB			−0.33	[−0.40, −0.25]	0.07	[0.05, 0.10]
HD	PRWB			−0.37	[−0.44, −0.29]	0.11	[0.08, 0.14]

total effect:						0.36	[0.32, 0.39]
CD	DEWB			0.47	[0.42, 0.51]	−0.11	[−0.13, −0.08]
HD	DEWB			0.35	[0.31, 0.38]	−0.10	[−0.12, −0.09]
total effect:						−0.29	[−0.31, −0.27]
CD	IDWB			0.39	[0.34, 0.44]	−0.09	[−0.11, −0.07]
HD	IDWB			0.37	[0.33, 0.41]	−0.11	[−0.13, −0.09]
total effect:						−0.22	[−0.25, −0.18]
the Comparison Model							
PERS	AMWB	0.35	[0.32, 0.37]	0.36	[0.32, 0.40]	0.12	[0.11, 0.14]
JR	AMWB	0.51	[0.49, 0.53]	0.30	[0.26, 0.34]	0.15	[0.13, 0.18]
JD	AMWB	−0.31	[−0.34, −0.28]	−0.16	[−0.20, −0.11]	0.05	[0.04, 0.06]
total effect:						0.39	[0.36, 0.42]
PERS	PRWB			0.32	[0.25, 0.39]	0.11	[0.09, 0.14]
JR	PRWB			0.24	[0.18, 0.31]	0.12	[0.09, 0.16]
JD	PRWB			−0.26	[−0.32, −0.20]	0.08	[0.06, 0.10]
total effect:						0.35	[0.31, 0.39]
PERS	DEWB			−0.27	[−0.31, −0.23]	−0.09	[−0.11, −0.08]
JR	DEWB			−0.22	[−0.25, −0.18]	−0.11	[−0.13, −0.09]
JD	DEWB			0.39	[0.36, 0.43]	−0.12	[−0.14, −0.11]
total effect:						−0.26	[−0.29, −0.24]
PERS	IDWB			−0.26	[−0.31, −0.21]	−0.09	[−0.11, −0.07]
JR	IDWB			−0.17	[−0.21, −0.12]	−0.08	[−0.11, −0.06]
JD	IDWB			0.40	[0.36, 0.44]	−0.13	[−0.14, −0.11]
total effect:						−0.19	[−0.22, −0.15]

Note: independent variable = TFL, 95%-CI = likelihood-based confidence intervals; TFL = transformational leadership, CD = challenge demands, HD = hindrance demands, PERS = personal resources, TASK = task-related resources, ORG = organizational resources, REL = relational resources, JR = job resources, JD = job demands, AMWB = affective–motivational well-being, PRWB = pleased–relaxed well-being, DEWB = depressed–exhaustive well- being, IDWB = irritated–distressed well-being.

The Job Demands Model tested the mediation effect of challenge demands (H3a) and hindrance demands (H3b) on four indicators of well-being. Figure 4b shows the parameter estimates of this model, while Table 1 displays the indirect effects. The model had an acceptable fit (RMSEA = 0.02, SRMR = 0.10, CFI = 0.93). TFL was negatively related to challenge demands ($\beta = -0.23$) and hindrance demands ($\beta = -0.30$), while these were, in turn, related to the indicators of well-being. Challenge demands were more strongly related to the negative indicators (depressed–exhaustive well-being: $\beta = 0.47$, irritated–distressed well-being: $\beta = 0.39$) than to the positive indicators (affective–motivational well-being: $\beta = -0.26$, pleased–relaxed well-being: $\beta = -0.33$), while this pattern was less pronounced for hindrance demands (affective–motivational well-being: $\beta = -0.28$, pleased–relaxed well-being: $\beta = -0.33$, depressed–exhaustive well-being: $\beta = 0.35$, irritated–distressed well-being: $\beta = 0.37$). The indirect effects were all significant ($\beta = 0.06$–0.11), which indicates that job demands mediated the relationships between TFL and all the indicators of employee well-being. Thus, H3a and H3b were confirmed. Moreover, the direct effects of TFL on the indicators of negative well-being were small ($\beta = -0.08$, (−0.12, −0.04) for depressed–exhaustive well-being) to very small in size ($\beta = -0.01$, (−0.06, 0.03) for irritated–distressed well-being) and, in the case of irritated–distressed well-being, even nonsignificant, which indicates a very large impact of job demands on indicators of negative well-being.

3.3. The Relative Strength of Mediating Effects of Work Characteristics

To judge the relative influence of the different job demands and resources on individual indicators of well-being (RQs 1 and 2), we first tested a model comparing the mediating potential of the broader categories of personal resources, job resources and job demands in the TFL–well-being relationship (the Comparison Model, see Figure 1c). Subsequently, it would have been the goal to test all the work characteristics and indicators of well-being in one model. However, we could not manage to get this model to converge, which is why we cannot trust its results and do not present it in the manuscript. Instead, to analyze the relative mediating effect of all the work characteristics in the TFL–well-being relationship, we calculated four models entailing all the work characteristics and one indicator of well-being each (see Figure 2a–d). First, we report the results of the Comparison Model and complement those by additional relevant results of the models entailing all work characteristics and one indicator of well-being each.

As displayed in Figure 4c, the Comparison Model indicated a good fit (RMSEA = 0.02, SRMR = 0.09, CFI = 0.95). While TFL was positively related to personal and job resources (personal: $\beta = 0.35$, job resources: $\beta = 0.51$), it was negatively related to job demands ($\beta = -0.31$). All the resources were, in turn, positively related to indicators of positive well-being (personal resources: $\beta = 0.36$, job resources: $\beta = 0.30$ to affective–motivational well-being and personal resources: $\beta = 0.32$, job resources: $\beta = 0.24$ to pleased–relaxed well-being) and negatively related to indicators of negative well-being (personal resources: $\beta = -0.27$, job resources: $\beta = -0.22$ to depressed–exhaustive well-being and personal resources: $\beta = -0.26$, job resources: $\beta = -0.17$ to irritated–distressed well-being). Job demands were negatively related to indicators of positive well-being ($\beta = -0.16$ to affective–motivational well-being, $\beta = -0.26$ to pleased–relaxed well-being) and positively related to indicators of negative well-being ($\beta = 0.39$ to depressed–exhaustive well-being, $\beta = 0.40$ to irritated–distressed well-being).

The indirect effects of the Comparison Model are displayed in Table 1. All the indirect effects of the model were significant and of small to moderate size, while the direct effects of TFL on the indicators of well-being were small ($\beta = 0.06$ for affective–motivational well-being, $\beta = 0.07$ for depressed–exhaustive well-being, $\beta = 0.11$ for irritated–distressed well-being), and in the case of pleased–relaxed well-being, even very small and nonsignificant ($\beta = 0.03$, [−0.04, 0.11]). This indicates mediation of the TFL–well-being relationship through personal resources, job resources and job demands for all the indicators of well-being.

When inspecting the relative impact of personal resources, job resources and job demands on the TFL–well-being relationship, one sees that personal resources and JR had a stronger effect on the relationship between TFL and the indicators of positive well-being than JD ($\beta = 0.12$, $\beta = 0.15$ for affective–motivational well-being compared to $\beta = 0.05$; $\beta = 0.12$, $\beta = 0.11$ for pleased–relaxed well-being compared to $\beta = 0.08$, respectively). This pattern was reversed for the relationship between TFL and the indicators of negative well-being ($\beta = -0.09$, $\beta = -0.11$, $\beta = -0.12$ for depressed–exhaustive well-being; $\beta = -0.09$, $\beta = -0.08$, $\beta = -0.13$ for irritated–distressed well-being, respectively).

RQ2 asked for the relative influence of all the types of work characteristics on individual indicators of well-being. Figure 5a–d shows the direct effects of these analyses, while Table 2 displays the indirect effects. All the models displayed in Figure 5a–d had an acceptable fit.

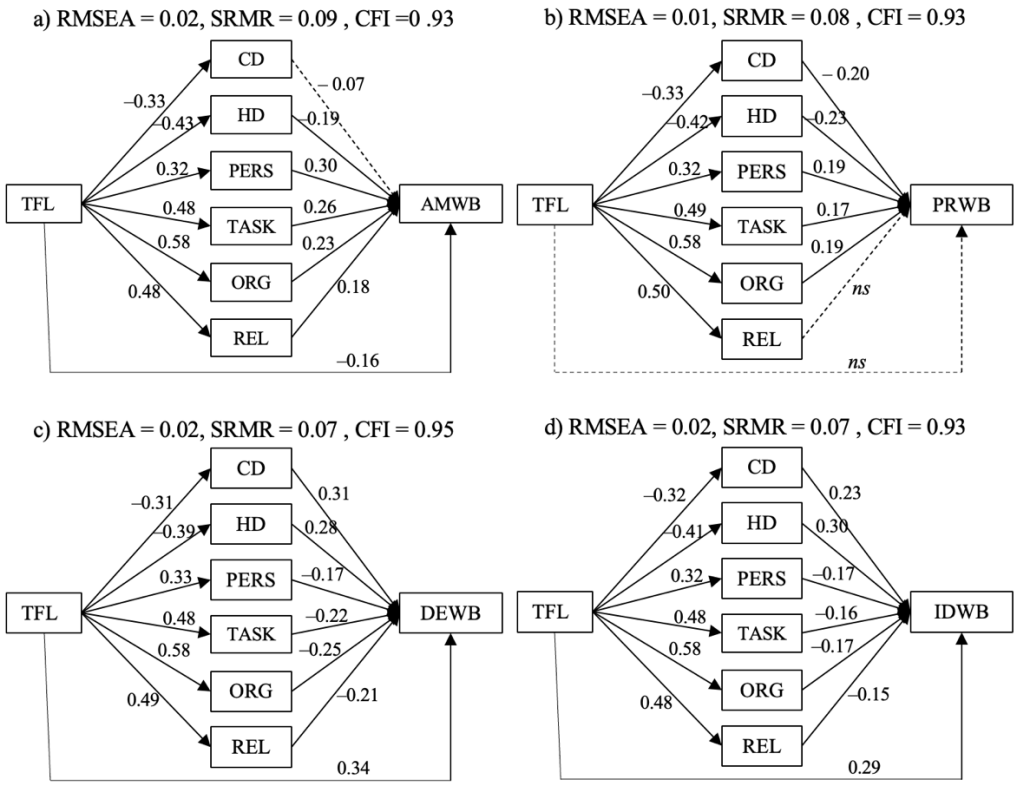

Figure 5. (**a**–**d**) Parameter estimates for the models including all types of work characteristics and one well-being indicator. Note: all effect sizes are significant at $\alpha = 0.05$; ns = nonsignificant; abbreviations of the variable names = see Figure 2a–d.

All the models showed significant direct and indirect effects, except for two paths. First, the relationship of challenge demands with affective–motivational well-being was nonsignificant (β= −0.05, (−0.12, 0.02)). The mediation effect of challenge demands on the relationship between TFL and affective–motivational well-being was, thus, also weak and nonsignificant (β_i = −0.02, (−0.01, 0.04)). Second, the relational resources/pleased–relaxed well-being relationship was marginally nonsignificant (β = 0.13, (−0.00, 0.25)), which also resulted in a nonsignificant indirect effect of REL on the TFL/pleased–relaxed well-being relationship (β_i = 0.06, (−0.00, 0.12)).

Over all four models, job resources were most strongly related to affective–motivational well-being (β = 0.32–0.20 for affective–motivational well-being, β = 0.25–0.13 for all other indicators of well-being), while job demands were most strongly related to indicators of negative well-being (β= 0.33–0.22 for the negative indicators, β = −0.23–−0.05 for the positive indicators). Organizational resources had the strongest mediating effect on the relationships between TFL and all the indicators of well-being. The weakest mediating effects could be found for job demands on the relationship between TFL and affective–motivational well-being, for challenge demands on the relationship between TFL and pleased–relaxed well-being and for personal resources on the relationships between TFL and all indicators of well-being, except affective–motivational well-being. Since the direct effect of TFL on pleased–relaxed well-being was nonsignificant (β= −0.12, (−29, 0.05)), the relationship between TFL and pleased–relaxed well-being was fully mediated by the work characteristics challenge demands, hindrance demands, personal resources, task-related resources, and organizational resources but not, however, by relational resources.

Table 2. Indirect effects of the four models with all types of work characteristics and one well-being indicator.

Mediator (M)	Dependent Variable (DV)	β_1 (TFL -> M)	95%-CI	β_2 (M -> DV)	95%-CI	β_i (Indirect e.)	95%-CI
CD	AMWB	−0.35	[−0.39, −0.31]	−0.05	[−0.12, 0.02]	−0.02	[−0.01, 0.04]
HD	AMWB	−0.44	[−0.47, −0.40]	−0.15	[−0.21, −0.09]	0.06	[0.04, 0.09]
PERS	AMWB	0.34	[0.31, 0.37]	0.32	[0.28, 0.35]	0.11	[0.09, 0.12]
TASK	AMWB	0.49	[0.47, 0.52]	0.27	[0.21, 0.33]	0.13	[0.10, 0.16]
ORG	AMWB	0.59	[0.56, 0.63]	0.27	[0.19, 0.34]	0.16	[0.11, 0.21]
REL	AMWB	0.49	[0.46, 0.53]	0.20	[0.12, 0.28]	0.10	[0.06, 0.14]
total effect:						0.39	[0.36, 0.41]
CD	PRWB			−0.15	[−0.25, −0.05]	0.05	[0.02, 0.09]
HD	PRWB			−0.23	[−0.32, −0.13]	0.10	[0.06, 0.14]
PERS	PRWB			0.18	[0.11, 0.26]	0.06	[0.04, 0.09]
TASK	PRWB			0.17	[0.08, 0.26]	0.08	[0.04, 0.13]
ORG	PRWB			0.19	[0.19, 0.35]	0.11	[0.01, 0.21]
REL	PRWB			0.13	[−0.00, −0.25]	0.06	[−0.00, 0.12]
total effect:						0.34	[0.30, 0.38]
CD	DEWB			0.30	[0.24, 0.36]	−0.10	[−0.13, −0.08]
HD	DEWB			0.27	[0.23, 0.32]	−0.12	[−0.14, −0.10]
PERS	DEWB			−0.18	[−0.23, −0.14]	−0.06	[−0.08, −0.05]
TASK	DEWB			−0.23	[−0.28, −0.19]	−0.12	[−0.14, −0.09]
ORG	DEWB			−0.25	[−0.32, −0.18]	−0.15	[−0.19, −0.11]
REL	DEWB			−0.21	[−0.27, −0.15]	−0.10	[−0.14, −0.07]
total effect:						−0.28	[−0.30, −0.25]
CD	IDWB			0.22	[0.16, 0.29]	−0.08	[−0.10, −0.05]
HD	IDWB			0.33	[0.28, 0.38]	−0.14	[−0.16, −0.12]
PERS	IDWB			−0.18	[−0.23, −0.13]	−0.06	[−0.08, −0.04]
TASK	IDWB			−0.16	[−0.22, −0.10]	−0.12	[−0.11, −0.05]
ORG	IDWB			−0.16	[−0.27, −0.05]	−0.15	[−0.16, −0.03]
REL	IDWB			−0.18	[−0.27, −0.09]	−0.10	[−0.14, −0.04]
total effect:						−0.20	[−0.24, −0.17]

Note: independent variable = TFL, 95%-CI = likelihood-based confidence intervals; numbers in italics = nonsignificant, TFL = transformational leadership, CD = challenge demands, HD = hindrance demands, PERS = personal resources, TASK = task-related resources, ORG = organizational resources, REL = relational resources, JR = job resources, JD = job demands, AMWB = affective–motivational well-being, PRWB = pleased–relaxed well-being, DEWB = depressed–exhaustive well- being, IDWB = irritated–distressed well-being.

3.4. Moderator Analyses

When the between-study heterogeneity in the relationship of TFL and employee well-being exceeded 50% (see Appendix A), we conducted moderator analyses with various categorical study-level moderators (study quality, publication status, publication year, continent of sample, industry of sample and kind of TFL measure). However, the moderator analyses provided rather inconsistent results (e.g., significance of moderators depending on the level of aggregation of the well-being indicators) and explained only very limited proportions of heterogeneity so that we were not entirely confident in interpreting them and refrained from reporting them here. The interested reader can find a supplement reporting on the most

relevant results and on a judgement of the study quality of the primary studies in the Supplemental Material (File S2). Additionally, the complete analyses can be viewed in the R Markdowns.

4. Discussion

Multiple mediators have been identified in the TFL–well-being relationship in previous research. However, these research findings have piled up to stand next to each other and do not give an indication as to which mediators are the most relevant ones in this relationship. This study intended to fill this research gap by synthesizing the existing evidence and examining the relative mediation impact of various types of job demands and resources with regard to TFL and its relationship with several indicators of well-being.

Overall, our study found all examined work characteristics (challenge and hindrance demands and personal, task-related, relational and organizational resources) to mediate the relationship between TFL and employee well-being, which hints at the possibility of job demands and job resources being helpful tools for leaders to influence their employees' well-being at the workplace. While all work characteristics appeared relevant, organizational resources were identified as the strongest mediators in this study. Personal resources, on the other hand, had the weakest mediating effects, at least compared with those of the other job resources. These findings contribute important knowledge to the existing research in giving researchers and practitioners a first guideline on what to examine and how to proceed to enhance employee well-being through TFL [10,19]. Thus, the so far rather arbitrary choice of mediators can be replaced by an informed one.

Confirming our first hypothesis, TFL was positively (and more strongly) related to the indicators of positive well-being (affective–motivational well-being and pleased–relaxed well-being) and negatively related to the negative ones (depressed–exhaustive well-being and irritated–distressed well-being). This pattern was evident for all the subcomponents of well-being. The strongest meta-analytic relationship was found for TFL and work engagement, which was also the most widely examined subcomponent of well-being in our analyses (23% of all correlations). These findings acknowledge the inspiring and motivating elements of TFL, which are important for developing high positive employee well-being and, particularly, work engagement [121,122].

Our second and third hypotheses asked for the mediating potential of job resources (H2) and job demands (H3) in the TFL–well-being relationship. As already stated, all the explored job resources and demands were relevant mediators, confirming the hypotheses. In more detail, job demands were the stronger mediators in the relationship between TFL and indicators of negative well-being, while job resources seemed to be more strongly mediating the TFL–positive well-being relationship (especially affective–motivational well-being). These findings confirm the observation by Inceoglu et al. [10] that positive and negative well-being are mediated in differing strengths and by different mediators and need to be differentiated when exploring the effect of TFL on well-being. Additionally, they underscore the motivational and health impairment processes suggested by the JD–R Model [69]: while job resources, such as autonomy or opportunities for development, enhance positive well-being states for employees, job demands deplete energy, leading to more negative well-being states [73].

The Job Demands Model in our study showed a strong mediation impact of job demands on the indicators of negative well-being, even fully mediating irritated–distressed well-being. It also showed that job demands play a role in the relationship between TFL and indicators of positive well-being, a path that has been under-researched so far [73]. Following the proposal of Breevaart and Bakker [73], to bring more light into this relationship by differentiating between challenge and hindrance demands, we found a slightly stronger negative mediation effect of hindrance demands (than challenge demands) on the TFL–positive well-being relationship. Interestingly, our expectation that certain (overtaxing) TFL behaviors promote challenge demands was not met. Instead, TFL reduced challenge demands. Thus, according to our findings, TFL leaders do not seem to overtax employees through their behaviors; on the contrary, they seem to be able to reduce challenging demands, such as excess workload, similar to hindrance demands. Our study could, therefore, not support the overtaxing elements of TFL. Instead, it seems that employees view their TFL leader as transformational so long as the leader shows all the positive attributes associated

with a TFL leader. When overtaxing leadership behaviors are shown, those leaders might no longer be viewed as transformational.

Surprisingly, challenge demands also showed a negative relationship with indicators of positive well-being. This finding was also contrary to our expectations, underscoring the ambivalent nature of challenge demands [123] and calling for attention to the rest of the work environment in the face of challenge demands. For example, several research works found (personal) job resources to be necessary for employees to retain positive well-being in the face of challenge demands [22,73,74,123]. Moreover, appraisal processes should be taken into consideration. A challenge demand for one person might be a hindrance demand for another person [124]. In summary, TFL leaders seem to be able to reduce all kinds of job demands and thereby enhance the positive well-being of their employees. However, the ambivalent nature of challenge demands raises the question of other environmental factors (e.g., the number of simultaneous resources) or appraisal processes to be considered in this interplay. In any case, the link between job demands and indicators of positive well-being, especially differentiating challenge and hindrance demands, is one that should be integrated and further developed in future research considerations.

Comparing the relative impact of all the work characteristics (R1 and R2), TFL was most strongly associated with organizational resources, which were also identified as the strongest mediating work characteristics across all the analyses. This fits the very definition of TFL, which entails the elements of change and articulates an attractive (organizational) vision, thereby creating hope and optimism conducive to organizational growth [7,121]. Through their TFL behaviors, TFL leaders provide structural empowerment and a climate for innovation, motivating their followers to act beyond self-interest and embrace higher organizational purposes [125,126]. This enhances employees' beliefs in themselves and satisfies their basic psychological needs, in turn creating enhanced employee well-being, especially affective–motivational well-being components such as work engagement [7,127]. Additionally, TFL leaders represent and transmit organizational core values and ethical standards [24,58], facilitate justice perceptions [47,128] and delegate responsibility [58], thereby enhancing their employees' feelings of involvement, congruence and just treatment. Thus, at their core, TFL leaders represent, translate and channel organizational values, goals and rules and convey security, belonging and appraisal to their employees, thereby contributing to individual well-being.

Personal resources, on the other hand, had the weakest mediating effects on the relationship between TFL and all the indicators of well-being, except for affective–motivational well-being. It seems that personal resources, such as occupational self-efficacy or proactivity, although job-specific, are only influenced by the leader to a small degree and rely greatly on personal initiative and past experiences [121,129]. These findings imply that leaders would be most successful in enhancing personal resources by giving their followers room to develop themselves (e.g., by granting time for personal development and encouragement) and supporting organizational initiatives for personal coaching or training [22].

The models entailing all the work characteristics showed a full mediation of the relationship between TFL and pleased–relaxed well-being. Thus, it seems that, for employees to be calm, focused and content, leaders are measured only by their ability to create a pleasant work environment. Caring for an abundance of job resources and reducing job demands are the leaders' role in this regard [127,130].

5. Limitations and Implications for Future Research

First and foremost, it must be noted that our findings are based on cross-sectional data and are, therefore, not conducive to inferences of causality and reciprocity. Although there is compelling theoretical reasoning to suggest this order of the studied variables, it would also be conceivable, for example, for work characteristics to influence how TFL leaders behave in response to ambient factors, in turn influencing the well-being of their employees [131,132]. Other longitudinal studies have proposed a reciprocal relationship between TFL and employee well-being, in which better well-being predicted better perceived leadership or in which both variables influenced one another [133,134]. Moreover, Inceoglu et al. [10] found some inconsistencies in the results of cross-sectional and longitudinal studies exploring the mediation effects

between TFL and employee well-being. Thus, longitudinal research is necessary to establish the right ordering of the variables of leadership, job resources and job demands in addition to the aspects of positive and negative employee well-being and to confirm the cross-sectional results of this study. The same is true for the prevention of selection bias in that employees were chosen for certain TFL leaders based on certain characteristics. Adding to this call, due to the inevitable broadness of the work characteristic and well-being categories in this study, this piece should be regarded as a first prospect on the relative value of different work characteristic categories in the TFL–well-being relationship and should be complemented by narrower and more differentiated scopes of research questions.

Second, the data in our study were based on self-report data, which poses the risk of inflated results due to a common method bias [135]. However, we decided to focus on this reporting style for the examined variables for various reasons. For example, TFL in its linkage to employee well-being can best be rated by followers. They are the ones interacting with and observing their leader at their workplace, while ratings by the leaders would have had a high risk of being biased in their favor. Furthermore, well-being is very subjective and is unlikely to be influenced by faking or other impression management issues that would threaten the validity of the measurements [136]. Moreover, self-reports provide qualitatively rich information about the conditions of a person who no one else has access to, and participants will most likely be very willing to provide information about their workplace or state of well-being and use this information to their advantage (e.g., to provoke change after a survey) (e.g., [137,138]). What is more, the research is not united regarding a methodology bias of self-report data [136,139]. Therefore, we considered self-reports to be a suitable measurement approach for the examined variables in our study.

Based on the very nature of meta-analyses, we were dependent on the data provided by the examined studies. Thus, our data consisted of studies from many different contexts, populations, etc., leading to substantial heterogeneity. To reduce the heterogeneity, we tried to find a good balance between types/indicators that were narrow enough to measure similar facets of well-being and work characteristics while also being broad enough to acquire a substantial number of correlations per type/indicator. Additionally, we conducted several moderator analyses of study-level moderators. Because these analyses did not yield consistent results over different levels of aggregation and did not explain a huge amount of variance, the question of potential moderators remains unanswered and warrants further research. The study of boundary conditions and contextual factors of the TFL–well-being relationship seems to be a promising one here [1] as, especially when regarding well-being, people might have different starting points and ways to adapt to external stimuli [22,140]. Unfortunately, it is not yet possible to implement such individual-level moderators in meta-analytic research so far, which is why we have to point to primary research to enhance knowledge in this area. For example, the study of personal resources as boundary conditions for how well employees can make use of the TFL behaviors of their leaders would advance the current research. Some previous research identified personality traits as an important leverage point for making use of the TFL behaviors of the leader [141–143]. Other research identified more malleable personal resources, such as detachment from work, as important boundary conditions in the relationship between TFL and well-being [22,144]. However, for example, a study by Gregersen et al. [129] could not confirm occupational self-efficacy as a relevant moderator. Thus, the study of the optimal conditions under which TFL leaders most effectively exert their influence warrants further research. Moreover, since the results of our study question the mediating effect of personal resources, it would be valuable to compare their mediating and moderating potential in one study to see how they can be installed by leaders to create the greatest benefit for employees.

Lastly, the concept of TFL is not without critique [19,20]. The ambiguity regarding the scale construction of this concept gives rise to the question of the rightful usage of this concept. Thus, it would certainly be valuable to confirm the findings of this study regarding more stringent leadership concepts to verify the results for leadership in general. Moreover, previous research has identified facets of TFL to be overtaxing to employees, leading to negative well-being outcomes [21,23]. Our study, however, could not support these negative effects. Thus, the question of the negative impacts of certain TFL facets remains equivocal. Unfortunately, we were not able to explore the impact of subdimensions of TFL in our models

due to insufficient studies reporting on them. It would be valuable for future research to incorporate subdimensions of TFL to gain a more differentiated picture of TFL behaviors and resolve the inconsistencies in study findings [1].

6. Practical Implications

The involvement of leaders in promoting their employees' health is increasingly considered essential for effective occupational health promotion [2,145]. We found in our study that work characteristics are an important means by which TFL leaders can indirectly influence their employees' well-being. In particular, our study hints at the possibility that the provision of organizational resources could be an important leverage for them. Additionally, their position as role models and messengers of organizational resources makes them ideal "carriers" of organizational core values and proceedings. However, one has to keep in mind that the ordering of the variables could also be different. For example, TFL leaders could be more prevalent in organizations with high organizational resources (e.g., a positive health-specific organizational climate). Thus, again, the longitudinal confirmation of the results is needed.

Leaders and organizations alike might not be aware of their power and responsibility in this regard and need to be trained to effectively apply this knowledge. In this regard, TFL leaders should, for example, learn to represent and live by organizational values, involve their employees and treat them fairly. This promotes an organizational culture of support, respect and authenticity, which enhances the well-being of employees [146]. Additionally, establishing a climate for innovation by the (structural) empowerment of employees, timely feedback and the transportation of organizational support should be especially well handled by TFL leaders due to their change-oriented leadership competencies [126].

Furthermore, TFL leaders should be aware of how finely nuanced their possibilities for influencing employee well-being are: for example, increasing job demands is highly associated with increases in negative well-being, while the enhancement of job resources both increases positive well-being (especially affective–motivational well-being) and decreases negative well-being. The improvement of work characteristics seems especially important to gain calm, relaxed and content employees since direct leadership efforts are in vain here.

Since leaders often do not have psychological work knowledge and are not aware of their potential influence as a designer of their employees' work characteristics and work environment, organizations should offer this knowledge through training interventions and enable their TFL leaders to enhance and protect their employees' well-being by modifying their work characteristics. Since the scope of leaders in this regard is always tied to organizational boundaries, this topic also requires the support of the organization at large.

7. Conclusions

The aim of our study was to shed light on the indirect mechanisms of the TFL–well-being relationship by examining the relative impact of various types of job resources and demands on TFL and well-being. The mediation patterns differed for each type of work characteristic and each indicator of well-being, indicating the complexity by which TFL leaders influence employee well-being. While all job resources and job demands were relevant mediators, organizational resources were identified as the most relevant mediators in the TFL–well-being relationship. These findings provide new insights on the importance of organizational resources in the scope of influence of TFL leaders and contribute to a new prioritization of different types of resources in TFL research. The results of our study will hopefully provide guidance on the indirect mechanisms between TFL and employee well-being for researchers and practitioners seeking to develop new research designs and effective health-promoting interventions.

Supplementary Materials: File S1: Analyses of publication bias for positive affect and emotional exhaustion; File S2: Significant moderator analyses and study quality; File S3: Reference list of all studies included in the analyses; Table S1: Search history; Table S2: Prisma checklist; Table S3: Coding manual; Table S4: Detailed information on the studies

included in the analyses; Table S5: Full correlation matrices for SEM. Data, R Markdowns and forest plots can be viewed on https://osf.io/c59q2/ (last accessed 26/02/22).

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A reference list of all studies included in the analyses can be found in File S3.

References

1. Arnold, K.A. Transformational leadership and employee psychological well-being: A review and directions for future research. *J. Occup. Health Psychol.* **2017**, *22*, 381–393. https://doi.org/10.1037/ocp0000062.
2. Vincent-Höper, S.; Teetzen, F.; Gregersen, S.; Nienhaus, A. Leadership and employee well-being. In *Research Handbook on Work and Well-Being*; Edward Elgar Publishing: Cheltenhalm, UK, 2017; pp. 269–292.
3. Skakon, J.; Nielsen, K.; Borg, V.; Guzman, J. Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research. *Work Stress* **2010**, *24*, 107–139. https://doi.org/10.1080/02678373.2010.495262.
4. Wegge, J.; Shemla, M.; Haslam, S.A. Leader Behavior as a Determinant of Health at Work: Specification and Evidence of Five Key Pathways. *Ger. J. Hum. Resour. Manag.* **2014**, *28*, 6–23. https://doi.org/10.1177/239700221402800102.
5. Hentrich, S.; Zimber, A.; Garbade, S.F.; Gregersen, S.; Nienhaus, A.; Petermann, F. Relationships between transformational leadership and health: The mediating role of perceived job demands and occupational self-efficacy. *Int. J. Stress Manag.* **2017**, *24*, 34–61. https://doi.org/10.1037/str0000027.
6. Vincent-Höper, S.; Stein, M. The Role of Leaders in Designing Employees' Work Characteristics: Validation of the Health- and Development-Promoting Leadership Behavior Questionnaire. *Front. Psychol.* **2019**, *10*, 1049. https://doi.org/10.3389/fpsyg.2019.01049.
7. Tafvelin, S.; Armelius, K.; Westerberg, K. Toward Understanding the Direct and Indirect Effects of Transformational Leadership on Well-Being : A Longitudinal Study. *J. Leadersh. Organ. Stud.* **2011**, *18*, 480–492. https://doi.org/10.1177/1548051811418342.
8. Breevaart, K.; Bakker, A.B.; Demerouti, E.; Sleebos, D.M.; Maduro, V. Uncovering the Underlying Relationship Between Transformational Leaders and Followers' Task Performance. *J. Pers. Psychol.* **2014**, *13*, 194–203. https://doi.org/10.1027/1866-5888/a000118.
9. Fernet, C.; Trépanier, S.-G.; Austin, S.; Gagné, M.; Forest, J. Transformational leadership and optimal functioning at work: On the mediating role of employees' perceived job characteristics and motivation. *Work Stress* **2015**, *29*, 11–31. https://doi.org/10.1080/02678373.2014.1003998.
10. Inceoglu, I.; Thomas, G.; Chu, C.; Plans, D.; Gerbasi, A. Leadership behavior and employee well-being: An integrated review and a future research agenda. *Leadersh. Q.* **2018**, *29*, 179–202. https://doi.org/10.1016/j.leaqua.2017.12.006.
11. Demerouti, E.; Bakker, A.B.; Nachreiner, F.; Schaufeli, W. The job demands-resources model of burnout. *J. Appl. Psychol.* **2001**, *86*, 499–512. https://doi.org/10.1037/0021-9010.86.3.499.
12. Schaufeli, W.B. Engaging leadership in the job demands-resources model. *Career Dev. Int.* **2015**, *20*, 446–463. https://doi.org/10.1108/CDI-02-2015-0025.
13. Montano, D.; Reeske, A.; Franke, F.; Hüffmeier, J. Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective: Leadership and Followers' Mental Health. *J. Organ. Behav.* **2017**, *38*, 327–350. https://doi.org/10.1002/job.2124.
14. Harms, P.D.; Credé, M.; Tynan, M.; Leon, M.; Jeung, W. Leadership and stress: A meta-analytic review. *Leadersh. Q.* **2017**, *28*, 178–194. https://doi.org/10.1016/j.leaqua.2016.10.006.
15. Bass, B.M. *Leadership and Performance beyond Expectations*; Free Press: New York, NY, USA, 1985.
16. Hoch, J.E.; Bommer, W.H.; Dulebohn, J.H.; Wu, D. Do Ethical, Authentic, and Servant Leadership Explain Variance Above and Beyond Transformational Leadership? A Meta-Analysis. *J. Manag.* **2018**, *44*, 501–529. https://doi.org/10.1177/0149206316665461.
17. Avolio, B.J.; Bass, B.M. *Multifactor Leadership Questionnaire (MLQ)*; Mind Garden, Inc.: Menlo Park, CA, USA, 2004; Volume 29.
18. Rowold, J.; Borgmann, L. Are leadership constructs really independent? *Leadersh. Organ. Dev. J.* **2013**, *34*, 20–43. https://doi.org/10.1108/01437731311289956.

19. van Knippenberg, D.; Sitkin, S.B. A Critical Assessment of Charismatic—Transformational Leadership Research: Back to the Drawing Board? *Acad. Manag. Ann.* **2013**, *7*, 1–60. https://doi.org/10.1080/19416520.2013.759433.
20. Yukl, G. An evaluation of the conceptual weaknesses in transformational and charismatic leadership theories. *Leadersh. Q.* **1999**, *10*, 285–305.
21. Diebig, M.; Bormann, K.C.; Rowold, J. A double-edged sword: Relationship between full-range leadership behaviors and followers' hair cortisol level. *Leadersh. Q.* **2016**, *27*, 684–696. https://doi.org/10.1016/j.leaqua.2016.04.001.
22. Stein, M.; Schümann, M.; Vincent-Höper, S. A Conservation of Resources View of the Relationship Between Transformational Leadership and Emotional Exhaustion: The Role of Extra Effort and Psychological Detachment. *Work Stress* **2021**, *35*, 241–261.
23. Syrek, C.J.; Antoni, C.H. Unfinished tasks foster rumination and impair sleeping—Particularly if leaders have high performance expectations. *J. Occup. Health Psychol.* **2014**, *19*, 490–499. https://doi.org/10.1037/a0037127.
24. Franke, F.; Felfe, J. How does transformational leadership impact employees' psychological strain?: Examining differentiated effects and the moderating role of affective organizational commitment. *Leadership* **2011**, *7*, 295–316. https://doi.org/10.1177/1742715011407387.
25. Diener, E.; Seligman, M.E.P. Toward an Economy of Well-Being. *Psychol. Sci. Public Interest* **2004**, *5*, 1–31.
26. Wright, T.A.; Emich, K.J.; Klotz, D. The many "faces" of well-being. In *Work and Well-Being*; Burke, R.J., Page, K.M., Eds.; Edward Elgar Publishing: Cheltenham, UK, 2017; pp. 37–58.
27. Salanova, M.; Del Líbano, M.; Llorens, S.; Schaufeli, W.B. Engaged, Workaholic, Burned-Out or Just 9-to-5? Toward a Typology of Employee Well-being: Employee Well-being and Work Investment. *Stress Health* **2014**, *30*, 71–81. https://doi.org/10.1002/smi.2499.
28. Russell, J.A.; Carroll, J.M. On the Bipolarity of Positive and Negative Affect. *Psychol. Bull.* **1999**, *125*, 3–30.
29. Warr, P. The measurement of well-being and other aspects of mental health. *J. Occup. Psychol.* **1990**, *63*, 193–210.
30. Deci, E.L.; Ryan, R.M. Hedonia, eudaimonia, and well-being: An introduction. *J. Happiness Stud.* **2008**, *9*, 1–11. https://doi.org/10.1007/s10902-006-9018-1.
31. Shamir, B.; House, R.J.; Arthur, M.B. The Motivational Effects of Charismatic Leadership: A Self-Concept Based Theory. *Organ. Sci.* **1993**, *4*, 577–594. https://doi.org/10.1287/orsc.4.4.577.
32. Sivanathan, N.; Arnold, K.A.; Turner, N.; Barling, J. Leading well: Transformational leadership and well-being. In *Positive Psychology in Practice*; John Wiley & Sons, Inc: Hoboken, NJ, USA, 2004.
33. Berkman, L.F. The Role of Social Relations in Health Promotion: *Psychosom. Med.* **1995**, *57*, 245–254. https://doi.org/10.1097/00006842-199505000-00006.
34. Munir, F.; Nielsen, K.; Carneiro, G.I. Transformational leadership and depressive symptoms: A prospective study. *J. Affect. Disord.* **2010**, *120*, 235–239. https://doi.org/10.1016/j.jad.2009.03.020.
35. Bakker, A.; Demerouti, E.; Schaufeli, W. Dual processes at work in a call centre: An application of the job demands—resources model. *Eur. J. Work Organ. Psychol.* **2003**, *12*, 393–417. https://doi.org/10.1080/13594320344000165.
36. Breevaart, K.; Bakker, A.B.; Hetland, J.; Hetland, H. The influence of constructive and destructive leadership behaviors on follower burnout. In *Burnout at Work: A Psychological Perspective*; Psychology Press: Hove, UK, 2014; pp. 102–121.
37. Kelloway, E.K.; Sivanathan, N.; Francis, L.; Barling, J. Poor Leadership. In *Handbook of Workplace Stress*; Sage Publications: Thousand Oaks, CA, USA, 2005; pp. 89–112.
38. Liu, J.; Siu, O.-L.; Shi, K. Transformational Leadership and Employee Well-Being: The Mediating Role of Trust in the Leader and Self-Efficacy: Transformational Leadership. *Appl. Psychol. Int. Rev.* **2009**, *59*, 454–479. https://doi.org/10.1111/j.1464-0597.2009.00407.x.
39. Nielsen, K.; Nielsen, M.B.; Ogbonnaya, C.; Känsälä, M.; Saari, E.; Isaksson, K. Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis. *Work Stress* **2017**, *31*, 101–120. https://doi.org/10.1080/02678373.2017.1304463.
40. Hawkes, A.J.; Biggs, A.; Hegerty, E. Work Engagement: Investigating the Role of Transformational Leadership, Job Resources, and Recovery. *J. Psychol.* **2017**, *151*, 509–531. https://doi.org/10.1080/00223980.2017.1372339.
41. Gilbert, M.-H.; Dagenais-Desmarais, V.; St-Hilaire, F. Transformational leadership and autonomy support management behaviors: The role of specificity in predicting employees' psychological health. *Leadersh. Organ. Dev. J.* **2017**, *38*, 320–332. https://doi.org/10.1108/LODJ-08-2015-0173.
42. Javeed, T.; Farooqi, Y.A. Impact of Transformational Leadership Style on Employees' Satisfaction and Well-Being with Working Conditions as Mediator. *Int. J. Multidiscip. Sci. Eng.* **2013**, *4*, 8.
43. Besieux, T.; Baillien, E.; Verbeke, A.L.; Euwema, M.C. What goes around comes around: The mediation of corporate social responsibility in the relationship between transformational leadership and employee engagement. *Econ. Ind. Democr.* **2015**, *39*, 249–271. https://doi.org/10.1177/0143831X15614914.
44. Dimoff JK, Kelloway EK. Leaders as resources: How managers and supervisors can socially support employees towards better mental health and wellbeing. In: Kelloway EK, Nielsen K, Dimoff JK, editors. Leading to Occupational Health and Safety. Chichester, West Sussex, UK: Wiley Blackwell; 2017. pp. 149–162.
45. Kark, R.; Shamir, B. The dual effect of transformational leadership: Priming relational and collective selves and further effects on followers. In *Transformational and Charismatic Leadership: The Road Ahead*; JAI Press: Amsterdam, NL, USA, 2002; pp. 67–91.
46. Cho, J.; Dansereau, F. Are transformational leaders fair? A multi-level study of transformational leadership, justice perceptions, and organizational citizenship behaviors. *Leadersh. Q.* **2010**, *21*, 409–421. https://doi.org/10.1016/j.leaqua.2010.03.006.

47. Gillet, N.; Fouquereau, E.; Bonnaud-Antignac, A.; Mokounkolo, R.; Colombat, P. The mediating role of organizational justice in the relationship between transformational leadership and nurses' quality of work life: A cross-sectional questionnaire survey. *Int. J. Nurs. Stud.* **2013**, *50*, 1359–1367. https://doi.org/10.1016/j.ijnurstu.2012.12.012.
48. Jena, L.K.; Pradhan, S.; Panigrahy, N.P. Pursuit of organisational trust: Role of employee engagement, psychological well-being and transformational leadership. *Asia Pac. Manag. Rev.* **2018**, *23*, 227–234. https://doi.org/10.1016/j.apmrv.2017.11.001.
49. Walsh, M.; Dupre, K.; Arnold, K.A. Processes through Which Transformational Leaders Affect Employee Psychological Health. *Ger. J. Hum. Resour. Manag. Z. Für Pers.* **2014**, *28*, 162–172. https://doi.org/10.1177/239700221402800109.
50. Schaufeli, W.B.; Bakker, A.B. Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *J. Organ. Behav.* **2004**, *25*, 293–315. https://doi.org/10.1002/job.248.
51. Bakker, A.B.; Hakanen, J.J.; Demerouti, E.; Xanthopoulou, D. Job resources boost work engagement, particularly when job demands are high. *J. Educ. Psychol.* **2007**, *99*, 274–284. https://doi.org/10.1037/0022-0663.99.2.274.
52. Bakker, A.B.; Xanthopoulou, D. Creativity and charisma among female leaders: The role of resources and work engagement. *Int. J. Hum. Resour. Manag.* **2013**, *24*, 2760–2779. https://doi.org/10.1080/09585192.2012.751438.
53. Vincent-Höper, S.; Gregersen, S.; Nienhaus, A. Do Work Characteristics Mediate the Negative Effect of Transformational Leadership on Impaired Well-Being? *Z. Für Arb. Organ. AO* **2017**, *61*, 167–180. https://doi.org/10.1026/0932-4089/a000249.
54. Hobfoll, S.E. Conservation of Resources: A new attempt at conceptualizing stress. *Am. Psychol.* **1989**, *44*, 513–524.
55. Hobfoll, S.E.; Freedy, J.; Lane, C.; Geller, P. Conservation of social resources: Social support resource theory. *J. Soc. Pers. Relatsh.* **1990**, *7*, 465–478.
56. Ghadi, M.; Fernando, M.; Caputi, P. Transformational leadership and work engagement: The mediating effect of meaning in work. *Leadersh. Organ. Dev. J.* **2013**, *34*, 532–550. https://doi.org/10.1108/LODJ-10-2011-0110.
57. Nielsen, K.; Randall, R.; Yarker, J.; Brenner, S.-O. The effects of transformational leadership on followers' perceived work characteristics and psychological well-being: A longitudinal study. *Work Stress* **2008**, *22*, 16–32. https://doi.org/10.1080/02678370801979430.
58. Holstad, T.J.; Rigotti, T.; Otto, K. Prozedurale Fairness als Mediator zwischen transformationaler Führung und psychischer Beanspruchung am Arbeitsplatz: Eine Mehrebenenstudie. *Z. Für Arb. Organ. AO* **2013**, *57*, 163–176. https://doi.org/10.1026/0932-4089/a000120.
59. Lewis, H.S.; Cunningham, C.J.L. Linking Nurse Leadership and Work Characteristics to Nurse Burnout and Engagement: *Nurs. Res.* **2016**, *65*, 13–23. https://doi.org/10.1097/NNR.0000000000000130.
60. Schmidt, B.; Loerbroks, A.; Herr, R.; Litaker, D.; Wilson, M.; Kastner, M.; Fischer, J. Psychosocial resources and the relationship between transformational leadership and employees' psychological strain. *Work* **2014**, *49*, 315–324. https://doi.org/10.3233/WOR-131713.
61. Dubinsky, A.J.; Yammarino, F.J.; Jolson, M.A.; Spangler, W.D. Transformational Leadership: An Initial Investigation in Sales Management. *J. Pers. Sell. Sales Manag.* **2013**, *15*, 17–31.
62. Green, A.E.; Albanese, B.J.; Shapiro, N.M.; Aarons, G.A. The roles of individual and organizational factors in burnout among community-based mental health service providers. *Psychol. Serv.* **2014**, *11*, 41–49. https://doi.org/10.1037/a0035299.
63. Cavanaugh, M.A.; Boswell, W.R.; Roehling, M.V.; Boudreau, J.W. An Empirical Examination of Self-Reported Work Stress Among U.S. Managers. *J. Appl. Psychol.* **2000**, *85*, 65–74.
64. Bass, B.M. *Transformational Leadership: Industry, Military, and Educational Impact*; Lawrence Erlbaum Associates: Mahwah, NJ, USA, 1998.
65. Rafferty, A.E.; Griffin, M.A. Dimensions of transformational leadership: Conceptual and empirical extensions. *Leadersh. Q.* **2004**, *15*, 329–354. https://doi.org/10.1016/j.leaqua.2004.02.009.
66. Dionne, S.D.; Yammarino, F.J.; Atwater, L.E.; Spangler, W.D. Transformational leadership and team performance. *J. Organ. Change Manag.* **2004**, *17*, 177–193. https://doi.org/10.1108/09534810410530601.
67. Syrek, C.J.; Apostel, E.; Antoni, C.H. Stress in highly demanding IT jobs: Transformational leadership moderates the impact of time pressure on exhaustion and work–life balance. *J. Occup. Health Psychol.* **2013**, *18*, 252–261. https://doi.org/10.1037/a0033085.
68. Danna, K.; Griffin, R.W. Health and Well-Being in the Workplace: A Review and Synthesis of the Literature. *J. Manag.* **1999**, *25*, 28.
69. Bakker, A.B.; Demerouti, E.; Verbeke, W. Using the job demands-resources model to predict burnout and performance. *Hum. Resour. Manag.* **2004**, *43*, 83–104. https://doi.org/10.1002/hrm.20004.
70. Bakker, A.B.; Demerouti, E.; Euwema, M.C. Job Resources Buffer the Impact of Job Demands on Burnout. *J. Occup. Health Psychol.* **2005**, *10*, 170–180. https://doi.org/10.1037/1076-8998.10.2.170.
71. Llorens, S.; Bakker, A.B.; Schaufeli, W.; Salanova, M. Testing the robustness of the job demands-resources model. *Int. J. Stress Manag.* **2006**, *13*, 378–391. https://doi.org/10.1037/1072-5245.13.3.378.
72. Crawford, E.R.; LePine, J.A.; Rich, B.L. Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *J. Appl. Psychol.* **2010**, *95*, 834–848. https://doi.org/10.1037/a0019364.
73. Breevaart, K.; Bakker, A.B. Daily job demands and employee work engagement: The role of daily transformational leadership behavior. *J. Occup. Health Psychol.* **2018**, *23*, 338–349. https://doi.org/10.1037/ocp0000082.
74. Tadić, M.; Bakker, A.B.; Oerlemans, W.G.M. Challenge versus hindrance job demands and well-being: A diary study on the moderating role of job resources. *J. Occup. Organ. Psychol.* **2015**, *88*, 702–725. https://doi.org/10.1111/joop.12094.
75. Gorgievski, M.J.; Hobfoll, S.E. Work can burn us out or fire us up: Conservation of resources in burnout and engagement. In *Handbook of Stress and Burnout in Health Care*; Nova Science Publishers: Hauppauge, NY, USA, 2008.
76. Albrecht, S.L. Challenge Demands, Hindrance Demands, and Psychological Need Satisfaction: Their Influence on Employee Engagement and Emotional Exhaustion. *J. Pers. Psychol.* **2015**, *14*, 70–79. https://doi.org/10.1027/1866-5888/a000122.

77. LePine, J.A.; Podsakoff, N.P.; LePine, M.A. A Meta-Analytic Test of the Challenge Stressor–Hindrance Stressor Framework: An Explanation for Inconsistent Relationships Among Stressors and Performance. *Acad. Manag. J.* **2005**, *48*, 764–775. https://doi.org/10.5465/amj.2005.18803921.
78. Oates, M.J. *How Do Transformational Leaders Reduce Managerial Stress? A Comparison of Mediated and Moderated Models*; San Diego State University: San Diego, USA, 2012. Available online: http://sdsudspace.calstate.edu/handle/10211.10/2056 (accessed on 21/07/2019).
79. Berger, R.; Czakert, J.P.; Leuteritz, J.-P.; Leiva, D. How and When Do Leaders Influence Employees' Well-Being? Moderated Mediation Models for Job Demands and Resources. *Front. Psychol.* **2019**, *10*, 2788. https://doi.org/10.3389/fpsyg.2019.02788.
80. Diebig, M.; Bormann, K.C.; Rowold, J. Day-level transformational leadership and followers' daily level of stress: A moderated mediation model of team cooperation, role conflict, and type of communication. *Eur. J. Work Organ. Psychol.* **2017**, *26*, 234–249. https://doi.org/10.1080/1359432X.2016.1250741.
81. Avolio, B.J.; Bass, B.M. *Multifactor Leadership Questionnaire (MLQ). Manual and Sampler Set*, 3rd ed.; Mindgarden: Redwood City, CA, USA, 1994.
82. Carless, S.A.; Wearing, A.J.; Mann, L. A Short Measure of Transformational Leadership. *J. Bus. Psychol.* **2000**, *14*, 17.
83. Podsakoff, P.M.; MacKenzie, S.B.; Bommer, W.H. Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *J. Manag.* **1996**, *22*, 259–298.
84. Kaluza, A.J.; Boer, D.; Buengeler, C.; van Dick, R. Leadership behaviour and leader self-reported well-being: A review, integration and meta-analytic examination. *Work Stress* **2020**, *34*, 34–56. https://doi.org/10.1080/02678373.2019.1617369.
85. Warr, P. How to Think About and Measure Psychological Well-being. In *Research Methods in Occupational Health Psychology*; Wang, M., Sinclair, R.R., Tetrick, L.E., Eds.; Psychology Press/Routledge: New York, NY, USA, 2013; pp. 76–90.
86. Judge, T.A.; Piccolo, R.F. Transformational and Transactional Leadership: A Meta-Analytic Test of Their Relative Validity. *J. Appl. Psychol.* **2004**, *89*, 755–768. https://doi.org/10.1037/0021-9010.89.5.755.
87. Warr, P.; Cook, J.D.; Wall, T.D. Scales for the measurement of some work attitudes and aspects of psychological well-being. *J. Occup. Organ. Psychol.* **1979**, *58*, 129–148. https://doi.org/10.1111/j.2044-8325.1979.tb00448.x.
88. Watson, D.; Anna, L.; Tellegen, A. Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales. *J. Pers. Soc. Psychol.* **1988**, *54*, 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063.
89. Schaufeli, W.B.; Salanova, M.; González-Romá, V.; Bakker, A.B. The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *J. Happiness Stud.* **2002**, *3*, 71–92. https://doi.org/10.1023/A:1015630930326.
90. van Katwyk, P.T.; Fox, S.; Spector, P.; Kelloway, E.K. Using the Job-Related Affective Well-Being Scale (JAWS) to investigate affective responses to work stressors. *J. Occup. Health Psychol.* **2000**, *5*, 219–230. https://doi.org/10.1037/1076-8998.5.2.219.
91. Bech, P. Measuring the dimension of psychological general well-being by the WHO-5. *Qual. Life Newsl.* **2004**, *32*, 15–16.
92. Goldberg, D.; Williams, P.A. *A User's Guide to the General Health Questionnaire*; NFER-Nelson: Windsor, UK, 1988.
93. Graham, L.; van Witteloostuijn, A. Leader-member exchange, communication frequency and burnout. In *Proceedings of the Discussion Paper Series*; Tjalling, C., Ed.; Koopmans Research Institute, Utrecht School of Economics: Utrecht, The Netherlands, 2010; pp. 1–41. Available online: http://www.uu.nl/sites/default/files/rebo_use_dp_2010_10-08.pdf (accessed on 21/07/2019).
94. Maslach, C.; Jackson, S.E. The measurement of experienced burnout. *J. Organ. Behav.* **1981**, *2*, 99–113. https://doi.org/10.1002/job.4030020205.
95. Gillespie, D.F.; Numerof, R.E. *The Development of a Unidimensional Measure of Burnout: The GNBI (Working Paper)*; Washington University: St. Louis, DC, USA, 1984.
96. Kristensen, T.S.; Hannerz, H.; Høgh, A.; Borg, V. The Copenhagen Psychosocial Questionnaire—A tool for the assessment and improvement of the psychosocial work environment. *Scand. J. Work. Environ. Health* **2005**, *31*, 438–449. https://doi.org/10.5271/sjweh.948.
97. Mohr, G.; Müller, A.; Rigotti, T.; Aycan, Z.; Tschan, F. The Assessment of Psychological Strain in Work Contexts. *Eur. J. Psychol. Assess.* **2006**, *22*, 198–206. https://doi.org/10.1027/1015-5759.22.3.198.
98. Lovibond, S.H.; Lovibond, P.F. *Manual for the Depression Anxiety Stress Scales (DASS)*; University of New South Wales, Sydney, Australia, 1993.
99. Cohen, S.; Kamarck, T.; Mermelstein, R. A Global Measure of Perceived Stress. *J. Health Soc. Behav.* **1983**, *24*, 385. https://doi.org/10.2307/2136404.
100. Rigotti, T.; Schyns, B.; Mohr, G. A Short Version of the Occupational Self-Efficacy Scale: Structural and Construct Validity Across Five Countries. *J. Career Assess.* **2008**, *16*, 238–255. https://doi.org/10.1177/1069072707305763.
101. de Jonge, J.; Reuvers, M.M.E.N.; Houtman, I.L.D.; Bongers, P.M.; Kompier, M.A.J. Linear and nonlinear relations between psychosocial job characteristics, subjective outcomes, and sickness absence: Baseline results from SMASH. *J. Occup. Health Psychol.* **2000**, *5*, 256–268. https://doi.org/10.1037/1076-8998.5.2.256.
102. Leiter, M.P.; Maslach, C. Areas of worklife: A structured approach to organizational predictors of job burnout. In *Research in Occupational Stress and Well-Being*; Emerald (MCB UP): Bingley, UK, 2003; Volume 3, pp. 91–134. https://doi.org/10.1016/S1479-3555(03)03003-8.
103. Semmer, N.K.; Zapf, D. Instrument zur Stressbezogenen Tätigkeitsanalyse (Instrument for stress-related job analysis (ISTA). In *Handbuch Psychologischer Arbeitsanalyseverfahren*; Dunckel, H., Ed.; vdf Hochschulverlag: Zürich, Switzerland, 1999; pp. 179–204.

104. Rizzo, J.R.; House, R.J.; Lirtzman, S.I. Role conflict and ambiguity in complex organizations. *Adm. Sci. Q.* **1970**, *15*, 150–163. https://doi.org/10.2307/2391486.
105. R Core Team R: A Language and Environment for Statistical Computing. Available online: https://www.r-project.org/ (accessed on 23 July 2019).
106. Viechtbauer, W. Conducting Meta-Analyses in *R* with the metafor Package. *J. Stat. Softw.* **2010**, *36*, 1–48. https://doi.org/10.18637/jss.v036.i03.
107. Cheung, M.W.-L. metaSEM: An R package for meta-analysis using structural equation modeling. *Front. Psychol.* **2015**, *5*, 1521. https://doi.org/10.3389/fpsyg.2014.01521.
108. Rosseel, Y. lavaan: An R package for structural equation modeling and more Version 0.5-12 (BETA). *J. Stat. Softw.* **2012**, *48*, 1–36. https://doi.org/10.18637/jss.v048.i02.
109. Conigrave, J. Msemtools: Routines, Tables and Figures for metaSEM Analyses. 2019. Available online: https://github.com/JConigrave/msemtools (accessed on 27/07/2020).
110. Wiernik, B.M.; Dahlke, J.A. Obtaining Unbiased Results in Meta-Analysis: The Importance of Correcting for Statistical Artefacts. *Adv. Methods Pract. Psychol. Sci.* **2020**, *3*, 94–123.
111. Cheung, M.W.-L. Modeling dependent effect sizes with three-level meta-analyses: A structural equation modeling approach. *Psychol. Methods* **2014**, *19*, 211–229. https://doi.org/10.1037/a0032968.
112. Cheung, S.F.; Chan, D.K.-S. Dependent Effect Sizes in Meta-Analysis: Incorporating the Degree of Interdependence. *J. Appl. Psychol.* **2004**, *89*, 780–791. https://doi.org/10.1037/0021-9010.89.5.780.
113. van Den Noortgate, W.; Onghena, P. Multilevel Meta-Analysis: A Comparison with Traditional Meta-Analytical Procedures. *Educ. Psychol. Meas.* **2003**, *63*, 765–790. https://doi.org/10.1177/0013164402251027.
114. Marín-Martínez, F.; Sánchez-Meca, J. Weighting by Inverse Variance or by Sample Size in Random-Effects Meta-Analysis. *Educ. Psychol. Meas.* **2010**, *70*, 56–73. https://doi.org/10.1177/0013164409344534.
115. Cheung, M.W.-L.; Chan, W. Meta-analytic structural equation modeling: A two-stage approach. *Psychol. Methods* **2005**, *10*, 40–64. https://doi.org/10.1037/1082-989X.10.1.40.
116. Wilson, S.J.; Polanin, J.R.; Lipsey, M.W. Fitting meta-analytic structural equation models with complex datasets. *Res. Synth. Methods* **2016**, *7*, 121–139. https://doi.org/10.1002/jrsm.1199.
117. Cleophas, T.J.; Zwinderman, A.H. *Modern Meta-Analysis: Review and Update of Methodologies*; Springer International Publishing: Cham, Switzerland, 2017. https://doi.org/10.1007/978-3-319-55895-0.
118. Sterne, J.A.C.; Becker, B.J.; Egger, M. The Funnel Plot. In *Publication Bias in Meta-Analysis: Prevention, Assessment and Adjustments*; Wiley & Sons Ltd.: Chichester, UK, 2005.
119. Egger, M.; Smith, G.D.; Schneider, M.; Minder, C. Bias in meta-analysis detected by a simple, graphical test. *BMJ* **1997**, *315*, 629–634. https://doi.org/10.1136/bmj.315.7109.629.
120. Duval, S.; Tweedie, R. Trim and Fill: A Simple Funnel-Plot-Based Method of Testing and Adjusting for Publication Bias in Meta-Analysis. *Biometrics* **2000**, *56*, 455–463. https://doi.org/10.1111/j.0006-341X.2000.00455.x.
121. Tims, M.; Bakker, A.B.; Xanthopoulou, D. Do transformational leaders enhance their followers' daily work engagement? *Leadersh. Q.* **2011**, *22*, 121–131. https://doi.org/10.1016/j.leaqua.2010.12.011.
122. Breevaart, K.; Bakker, A.; Hetland, J.; Demerouti, E.; Olsen, O.K.; Espevik, R. Daily transactional and transformational leadership and daily employee engagement. *J. Occup. Organ. Psychol.* **2014**, *87*, 138–157. https://doi.org/10.1111/joop.12041.
123. Widmer, P.S.; Semmer, N.K.; Kälin, W.; Jacobshagen, N.; Meier, L.L. The ambivalence of challenge stressors: Time pressure associated with both negative and positive well-being. *J. Vocat. Behav.* **2012**, *80*, 422–433. https://doi.org/10.1016/j.jvb.2011.09.006.
124. Li, P.; Taris, T.W.; Peeters, M.C.W. Challenge and hindrance appraisals of job demands: One man's meat, another man's poison? *Anxiety Stress Coping* **2020**, *33*, 31–46. https://doi.org/10.1080/10615806.2019.1673133.
125. Faupel, S.; Süß, S. The Effect of Transformational Leadership on Employees During Organizational Change—An Empirical Analysis. *J. Change Manag.* **2019**, *19*, 145–166. https://doi.org/10.1080/14697017.2018.1447006.
126. Monje Amor, A.; Abeal Vázquez, J.P.; Faíña, J.A. Transformational leadership and work engagement: Exploring the mediating role of structural empowerment. *Eur. Manag. J.* **2020**, *38*, 169–178. https://doi.org/10.1016/j.emj.2019.06.007.
127. Gilbert, S.L.; Kelloway, E.K. Leadership, Recognition and Well-Being: A Moderated Mediational Model. *Can. J. Adm. Sci. Rev. Can. Sci. Adm.* **2018**, *35*, 523–534. https://doi.org/10.1002/cjas.1477.
128. Strom, D.L.; Sears, K.L.; Kelly, K.M. Work Engagement: The Roles of Organizational Justice and Leadership Style in Predicting Engagement Among Employees. *J. Leadersh. Organ. Stud.* **2014**, *21*, 71–82. https://doi.org/10.1177/1548051813485437.
129. Gregersen, S.; Vincent-Höper, S.; Nienhaus, A. The Relation Between Leadership and Perceived Well-Being: What Role Does Occupational Self-Efficacy Play? *J. Leadersh. Stud.* **2014**, *8*, 6–18. https://doi.org/10.1002/jls.21318.
130. Arnold, K.A.; Turner, N.; Barling, J.; Kelloway, E.K.; McKee, M.C. Transformational leadership and psychological well-being: The mediating role of meaningful work. *J. Occup. Health Psychol.* **2007**, *12*, 193–203. https://doi.org/10.1037/1076-8998.12.3.193.
131. Luchman, J.N.; González-Morales, M.G. Demands, control, and support: A meta-analytic review of work characteristics interrelationships. *J. Occup. Health Psychol.* **2013**, *18*, 37–52. https://doi.org/10.1037/a0030541.
132. Gregersen, S.; Vincent-Höper, S.; Nienhaus, A. Job-related resources, leader–member exchange and well-being—A longitudinal study. *Work Stress* **2016**, *30*, 356–373. https://doi.org/10.1080/02678373.2016.1249440.
133. Perko, K.; Kinnunen, U.; Tolvanen, A.; Feldt, T. Investigating occupational well-being and leadership from a person-centred longitudinal approach: Congruence of well-being and perceived leadership. *Eur. J. Work Organ. Psychol.* **2016**, *25*, 105–119. https://doi.org/10.1080/1359432X.2015.1011136.

134. van Dierendonck, D.; Haynes, C.; Borrill, C.; Stride, C. Leadership Behavior and Subordinate Well-Being. *J. Occup. Health Psychol.* **2004**, *9*, 165–175. https://doi.org/10.1037/1076-8998.9.2.165.
135. Podsakoff, P.M.; MacKenzie, S.B.; Podsakoff, N.P. Sources of Method Bias in Social Science Research and Recommendations on How to Control It. *Annu. Rev. Psychol.* **2012**, *63*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452.
136. Chan, D. So why ask me? Are self-report data really that bad? In *Statistical and Methodological Myths and Urban Legends*; Taylor & Francis Group: New York, NY, USA, 2009.
137. Paulhus, D.L.; Vazire, S. The self-report method. In *Handbook of Research Methods in Personality Psychology*; Guilford: New York, NY, USA, 2009; pp. 224–239.
138. Sandvik, E.; Diener, E.; Seidlitz, L. Subjective Well-Being: The Convergence and Stability of Self-Report and Non-Self-Report Measures. *J. Pers.* **1993**, *61*, 317–342. https://doi.org/10.1111/j.1467-6494.1993.tb00283.x.
139. Crampton, S.M.; Wagner, J.A. Percept-percept inflation in microorganizational research: An investigation of prevalence and effect. *J. Appl. Psychol.* **1994**, *79*, 67. https://doi.org/ 10.1037/0021-9010.79.1.67.
140. Diener, E.; Lucas, R.E.; Scollon, C.N. Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *Am. Psychol.* **2006**, *61*, 305–314. https://doi.org/10.1037/0003-066X.61.4.305.
141. Hildenbrand, K.; Sacramento, C.A.; Binnewies, C. Transformational leadership and burnout: The role of thriving and followers' openness to experience. *J. Occup. Health Psychol.* **2018**, *23*, 31–43. https://doi.org/10.1037/ocp0000051.
142. Perry, S.J.; Witt, L.A.; Penney, L.M.; Atwater, L. The downside of goal-focused leadership: The role of personality in subordinate exhaustion. *J. Appl. Psychol.* **2010**, *95*, 1145–1153. https://doi.org/10.1037/a0020538.
143. De Hoogh, A.H.B.; Den Hartog, D.N. Neuroticism and locus of control as moderators of the relationships of charismatic and autocratic leadership with burnout. *J. Appl. Psychol.* **2009**, *94*, 1058–1067. https://doi.org/10.1037/a0016253.
144. Zhu, W.; Avolio, B.J.; Walumbwa, F.O. Moderating Role of Follower Characteristics With Transformational Leadership and Follower Work Engagement. *Group Organ. Manag.* **2009**, *34*, 590–619. https://doi.org/10.1177/1059601108331242.
145. Zimolong, B.; Elke, G. Occupational health and safety management. In *Handbook of Human Factors and Ergonomics*; Wiley & Sons Ltd.: New York, NY, USA, 2006; pp. 673–707.
146. Arfat, Y.; Rehman, M.; Mahmood, K.; Saleem, R. The role of leadership in work engagement: The moderating role of a bureaucratic and supportive culture. *Pak. Bus. Rev.* **2017**, *19*, 688–705.

Appendix A. Three-level meta-analyses on TFL, indicators of well-being and mediators

Table 1. Three-Level Meta-Analyses of TFL with all Well-Being Indicators and their Subcomponents.

variables	*N*	k_s	k_c	r_c	*r*	*SE*	*95% CI*	$\tau_{(2)}^2$	$\tau_{(3)}^2$	$I^2_{(3)}$
positive well-being	154,858	148	172	.41	.37	.01	[.39, .44]	.004	.01	.69
affective-motivational	45,629	106	121	.43	.39	.01	[.41, .46]	.004	.01	.65
work engagement	39,173	89	98	.44	.39	.01	[.41, .47]	.002	.01	.74
positive affect	8,503	22	23	.38	.35	.03	[.33, .44]	.01	.003	.18
pleased-relaxed	114,430	50	51	.38	.34	.02	[.35, .41]	<.001	.009	.91
negative well-being	152,720	151	257	-.27	-.24	.01	[-.29, -.25]	.006	.006	.45
depressed-exhaustive	39,005	87	138	-.32	-.28	.01	[-.34, -.29]	.005	.007	.50
burnout	11,069	22	23	-.30	-.27	.03	[-.37, -.24]	<.001	.02	.89
emotional exhaustion	27,427	63	65	-.32	-.28	.01	[-.35, -.29]	.008	<.001	.00
depersonalization	8,547	27	28	-.33	-.29	.02	[-.38, -.28]	.01	<.001	.00
RPA	4,135	16	16	-.28	-.25	.03	[-.34, -.22]	.005	.005	.36
depression	2,292	6	6	-.32	-.28	.05	[-.42, -.23]	.005	.005	.39
irritated-distressed	31,015	64	75	-.22	-.20	.01	[-.25, -.20]	.002	.006	.61
negative affect	4,232	9	9	-.19	-.17	.03	[-.24, -.14]	.002	.002	.29
job stress	10,918	29	33	-.26	-.23	.02	[-.30, -.22]	<.001	.009	.76
irritation	16,860	29	33	-.20	-.18	.02	[-.23, -.17]	.005	<.001	.00

Note: N = sample size; k_s = number of samples; k_c = number of correlations; r_c = corrected correlation coefficient; *r* = uncorrected correlation coefficient; *SE* = standard error; *95%-CI* = Wald confidence intervals for r_c; $\tau_{(2)}^2$ = residual, variance; $\tau_{(3)}^2$ = estimate of variance between studies; $I^2_{(3)}$ = proportion of total variation due to between-study heterogeneity; RPA = reduced personal accomplishment

Table 2. Three-Level Meta-Analyses of the Mediators with TFL and Well-Being.

variables	***N***	k_s	k_c	r_c	***r***	***SE***	***95% CI***	$\tau_{(2)}^2$	$\tau_{(3)}^2$	$I^2_{(3)}$
Job demands										
challenge demands (CD)										
TFL ~ cd	12,538	19	20	-.25	-.22	.03	[-.31, -.18]	.002	.02	.83
cd ~ amwb	5,128	7	18	-.20	-.17	.05	[-.30, -.11]	.02	.002	.09
cd ~ prwb	4,382	6	9	-.26	-.22	.06	[-.37, -.15]	.02	.004	.19
cd ~ dewb	7,475	13	25	.49	.41	.04	[.41, .58]	.01	.02	.57
cd ~ idwb	7,878	10	20	.33	.28	.03	[.27, .39]	.01	<.001	.00
hindrance demands (HD)										
TFL ~ hd	17,789	25	49	-.33	-.29	.03	[-.31, -.18]	.02	.005	.19
hd ~ amwb	8,723	9	32	-.30	-.26	.05	[-.40, -.20]	.01	.01	.40
hd ~ prwb	4,565	7	12	-.38	-.32	.03	[-.43, -.33]	.002	.002	.39
hd ~ dewb	7,393	14	65	.42	.35	.02	[.37, .46]	.03	<.001	.00
hd ~ idwb	10,718	13	51	.41	.34	.03	[.35, .47]	.02	.007	.26

Job resources										
personal resources (PERS)										
TFL ~ pers	28,434	61	80	.31	.27	.02	[.26, .35]	.03	<.001	.00
pers ~ amwb	12,329	33	67	.47	.40	.03	[.41, .54]	.02	.02	.47
pers ~ prwb	4,588	7	17	.35	.30	.02	[.30, .39]	.01	<.001	.00
pers ~ dewb	13,215	20	54	-.33	-.27	.04	[-.40, -.26]	.02	.02	.48
pers ~ idwb	10,862	20	36	-.25	-.21	.02	[-.30, -.20]	.02	<.001	.00
task-related r. (TASK)										
TFL ~ task	16,577	40	71	.44	.38	.02	[.40, .48]	.02	.005	.22
task ~ amwb	9,273	21	41	.49	.40	.06	[.38, .60]	.02	.003	.13
task ~ prwb	4,660	9	17	.39	.33	.04	[.32, .47]	.001	.01	.80
task ~ dewb	7,834	17	72	-.39	-.31	.04	[-.47, -.32]	.007	.02	.70
task ~ idwb	8,031	11	38	-.22	-.17	.04	[-.31, -.13]	.004	.02	.79
organizational r. (ORG)										
TFL ~ org	22,263	37	46	.57	.51	.03	[.52, .63]	.02	.01	.44
org ~ amwb	10,516	24	36	.48	.42	.04	[.41, .56]	.005	.03	.78
org ~ prwb	9,121	5	6	.40	.35	.05	[.30, .49]	<.001	.01	.93
org ~ dewb	11,550	15	42	-.38	-.32	.03	[-.45, -.32]	.02	.009	.34
org ~ idwb	6,338	6	13	-.21	-.18	.05	[-.31, -.11]	.005	.01	.61
relational resources (REL)										
TFL ~ rel	17,126	28	32	.46	.40	.02	[.42, .50]	.02	<.001	.00
rel ~ amwb	8,082	15	21	.40	.34	.03	[.34, .45]	.01	<.001	.00
rel ~ prwb	4,394	6	8	.31	.26	.04	[.24, .39]	<.001	.006	.80
rel ~ dewb	12,528	16	36	-.36	-.30	.03	[-.42, -.31]	.008	.006	.39
rel ~ idwb	5,422	8	14	-.28	-.24	.03	[-.34, -.23]	.004	.002	.31

Note: N = sample size; k_s = number of samples; k_c = number of correlations; r_c = corrected correlation coefficient; *r* = uncorrected correlation coefficient; *SE* = standard error; 95%-CI = Wald confidence intervals for r_c; $\tau_{(2)}^2$ = residual variance; $\tau_{(3)}^2$ = estimate of variance between studies; $I^2_{(3)}$ = proportion of total variation due to between-study heterogeneity; RPA = reduced personal accomplishment; amwb = affective-motivational well-being; prwb = pleased-relaxed well-being; dewb = depressed-exhaustive well-being; idwb = irritated-distressed well-being

3.2 The second publication of this work

Organizational health climate as a precondition for health-oriented leadership: Expanding the link between leadership and employee well-being

Friederike Teetzen[1*], Katharina Klug[2]†, Holger Steinmetz[3]†, Sabine Gregersen[4], & Sylvie Vincent-Höper[5]

[1] Department of Work & Organizational Psychology, Institute for Psychology, University of Hamburg, Hamburg, Germany
[2] Faculty of Business Studies and Economics, University of Bremen, Bremen, Germany
[3] Faculty of Management, University of Trier, Germany
[4] Institution for statutory Accident Insurance and Prevention in the Health and Welfare Services, Hamburg, Germany
[5] IESW Institute for Environmental, Social and Work Psychology, Medical School Hamburg, Hamburg, Germany

† these authors contributed equally to this work

*** Correspondence:**
Friederike Teetzen
friederike.teetzen@uni-hamburg.de

Keywords: organizational health climate, health-oriented leadership, employee well-being, emotional exhaustion, job satisfaction

Abstract
The link between leadership and employee well-being is long established. In particular, health-oriented leadership is discussed as a leadership style specifically promoting employee well-being. However, the preconditions of health-oriented leadership remain largely unexplored. From the perspective of conservation of resources theory, leaders can only provide resources when receiving some themselves. We propose that organizational health climate (OHC) is an important organization-based resource for a health-oriented leadership style. More specifically, we hypothesize that the relationship between OHC and employee job satisfaction and emotional exhaustion is mediated by health-oriented leadership. We thereby differentiate two levels of analysis: a within-team level and a between-team level. We examined 74 teams with 423 employees of childcare centers at three time points, each six months apart. By means of multilevel structural equation modeling, we found OHC to be a significant antecedent of health-oriented leadership at the between-team level. The relationship between OHC and employee job satisfaction was mediated by health-oriented leadership at the between-team level, but not at the within-team level. The relationship between OHC and employee exhaustion showed another pattern of relationships at different levels of analysis, although it was not significantly mediated by health-oriented leadership. This indicates the value of differentiating between levels of analysis. We discuss the implications for theory and practice that can be drawn from our findings.

1 Introduction

Abundant research in the last 15 years has identified leadership as playing a significant role in employee well-being (Montano et al., 2017; Teetzen et al., 2022). Complementing this evidence, specific measures of health-oriented leadership have been formulated to acknowledge the leadership–well-being link, for example, in the *health-oriented leadership* concept by Franke et al. (2014). It describes a comprehensive framework of attitudes and action patterns of leaders that enhance employee well-being and has great leverage in the improvement and maintenance of employee well-being (e.g., Hauff et al., 2022; Vonderlin et al., 2021).

However, the specific preconditions that leaders need to be able to lead in a health-oriented way and, thus, enhance employee well-being, have scarcely been researched (Alilyyani et al., 2018; Inceoglu et al., 2021). Since leaders are embedded in organizational contexts that frame their behavioral scope (Oc, 2018), we suggest that the organizational climate, which defines the shared perceptions of organizational policies, practices, and procedures and their attached meaning to them (Loh et al., 2019), is a critical leadership precondition. More specifically, we believe that the *organizational health climate* (OHC, Zweber et al., 2016) provides a crucial antecedent for health-oriented leaders. OHC is a facet-specific climate measure that explicitly focuses on the psychological well-being of employees through the perceived organizations' prioritization of employee health (Zohar & Luria, 2005; Zweber et al., 2015). It is largely driven by senior management (Dollard & Bakker, 2010) and provides cues about the kinds of behaviors that are expected and rewarded in healthy organizations (Dollard et al., 2019). This is comparable to the role of other climate facets as normative contexts, such as safety climate, which acts as a safety signal for directors and teachers in schools that they work in a safe environment and can behave in safety-enhancing ways (Yulita et al., 2017).

In our study, we draw on the conservation of resources theory (COR, Hobfoll, 1989) and argue that leaders in possession of resources are more likely to invest these in employees (Hobfoll et al., 2018). Based on that logic, several studies have found a positive influence on leader behavior by task-related or relational job resources, such as delegation, autonomy, and social support (e.g., M. Arnold & Rigotti, 2020; Krick et al., 2022); however, organizational-level resources have been widely neglected. This lack of consideration of organizational-level factors has been criticized by Hobfoll et al. (2018) and is needed to provide the optimal organizational environment for health-oriented leadership behaviors to enhance employee well-being. We believe OHC acts as an organizational resource for leaders by which they acquire orientation and encouragement to act in a health-oriented way. Thus, we propose that OHC is a valuable organizational antecedent of health-oriented leadership.

Furthermore, while research has linked OHC to improved psychological health and reduced psychological strain (Zweber et al., 2015), the mechanisms behind this relationship remain unclear (e.g., Kaluza et al., 2020). Since leaders are the focal figures to transport organizational values and priorities to lower-level employees, we further propose that health-oriented leadership is a key mechanism by which a healthy organizational climate influences employee well-being. According to COR theory, different resources (like an OHC and health-oriented leadership) initiate a resource caravan passageway by reinforcing each other and, hence, replenish the resource reservoir of employees to enhance their well-being and leave them less susceptible to resource loss (Hobfoll, 2012).

While the outlined mediation process is important to be considered, it is not clear at which level (between teams vs. within teams) the proposed mechanisms mainly take place. The functioning of an organization as a whole depends on intergroup cooperation as well as on the functioning of teams (van Knippenberg, 2003). Thus, the shared perceptions inherent in OHC and health-oriented leadership at the between-team level may be grounded in different social processes than the individual within-team perceptions (Dollard, Opie, et al., 2012), which has valuable implications for leaders wanting to lead those teams. Thus, we differentiate the mediating mechanisms at the between-team and within-team levels.

Summing up, the present study has the following goals. First, by using a three-wave longitudinal survey, we examine OHC as an organizational antecedent of health-oriented leadership and analyze its role as a precondition for health-related leadership behavior. Second, we analyze the role of health-oriented leadership as a mediator of the OHC–employee well-being link. Third, we examine the mediating mechanism of health-oriented leadership at different levels of analysis (within and between teams) to reveal different relational patterns. The proposed research model can be viewed in Figure 1.

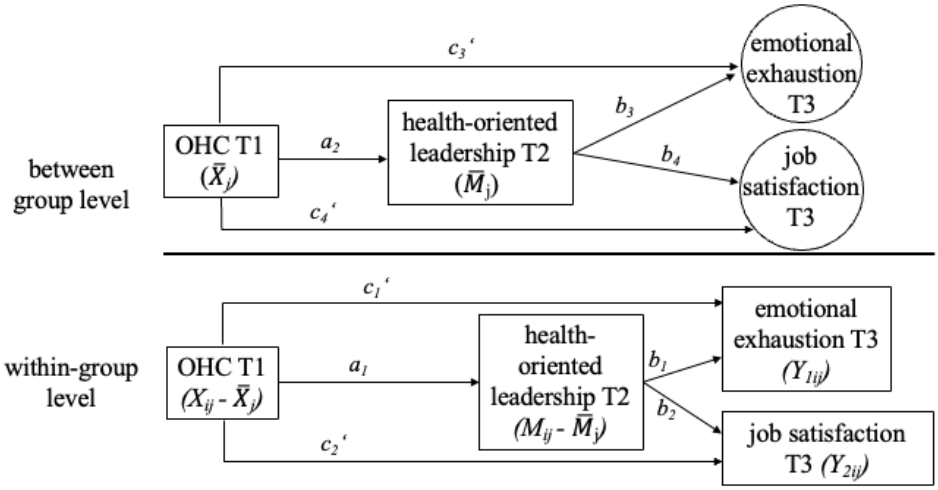

Figure 1. Proposed 2-2-1 mediation model. $\bar{X}_j$ and $\bar{M}_j$ represent the aggregated OHC and health-oriented leadership of team j, respectively. X_{ij}, M_{ij}, Y_{1ij} *and* Y_{2ij} represent the within-team OHC, health-oriented leadership, emotional exhaustion and job satisfaction of employee *i* in cluster *j*, respectively. For clarity, controls and autoregressive effect are not shown here.

Our study thereby contributes to existing research in several ways. First and foremost, we enhance knowledge of the supporting preconditions of health-oriented leadership, counteracting the mentioned omission of organizational antecedents of leadership with regard to employee well-being. By doing so, we attempt to broaden the scope to a more comprehensive framework that focuses on leaders and employees in the context in which they are embedded (Inceoglu et al., 2021; Oc, 2018). Contrary to personality (Tuncdogan et al., 2017) and leader ability (Courtright et al., 2016), organizational antecedents are more influenceable by organizations and can provide important starting points for supporting health-oriented behavior (Biron et al., 2018). The proposed ordering of the variables also strengthens the climate–leadership link (Yulita et al.,

2017), which has been proposed in contrast to the earlier leadership–climate link (e.g., Loh et al., 2021; Schneider et al., 2017).

Second, we broaden the scope of the mediation processes of organizational climate. We thereby provide evidence for OHC as a distal factor to employee well-being and mediation via leadership, next to the more prominent mediators of job characteristics (e.g., Dollard, Opie, et al., 2012).

Finally, the differentiation of between- and within-team levels regarding the examined variables uncovers differences in relational patterns at different levels of analysis and advances theory and practice regarding the functioning of intergroup and intragroup dynamics. This can sensitize future research to differentiating levels of analysis.

2 Theory

2.1 OHC and Health-Oriented Leadership

Like all employees, leaders work in a contextual environment (Nielsen & Taris, 2019), which lays out the boundaries of the leadership playing field (Oc, 2018). Surprisingly though, research on organizational-level antecedents of leadership remains scarce (e.g., Sharma, 2018; Tafvelin et al., 2018). Recent studies identified organizational climate as an important organizational antecedent of leadership because it defines the grounds on which leadership can flourish (Biron et al., 2018; Kaluza et al., 2020). Thus, leaders desired and permitted behaviors are determined by their perceptions of implicit and explicit organizational policies and procedures (Hammer et al., 2019).

Health-oriented leadership is a specific facet of leadership that puts a special focus on the enhancement of employee well-being and is clearly distinguishable from general leadership in influencing employee well-being (Gurt et al., 2011). It comprises two different dimensions, StaffCare and SelfCare, which describe the health-oriented values, awareness, and behaviors toward employees and toward leaders' own health, respectively (Franke et al., 2014). In this study, we focus on the behavioral dimension of StaffCare and define health-oriented leadership as the actions leaders take to improve employee well-being (i.e., designing the workplace of employees and supporting open communication).

Based on the initial evidence on organizational climate, we expect that health-oriented leadership should be positively impacted by a climate that is sensitive to improving employee well-being (Krick et al., 2022). The OHC reflects organizational values and priorities regarding employee health and provides a basis for health-oriented behaviors via implicit norms and cues or explicit guidelines, thus functioning as an important leadership resource (Zohar, 2010; Zweber et al., 2015). Since corollary one of COR theory states that individuals in possession of resources are more likely to invest them, a resource in the form of OHC should make it more likely for health-oriented leaders to show health-oriented leadership behaviors and hand resources down to employees. This should be especially true for a facet-specific organizational resource like OHC, since it sets the base for a greater congruence between words (OHC) and actions (health-oriented leadership) for employees (Biron et al., 2018; Yulita et al., 2017). Emphasis on the importance of facet-specificity in terms of organizational climate is given by Dollard, Tuckey et al. (2012), who stated that "organizational climate constructs should be narrowly focused on the outcome of

interest rather than broad bandwidth concepts" (p. 659). Indeed, the measurement of facet-specificity has been shown to increase the probability of detecting the desired behavior in various climate facets (e.g., Clarke, 2006).

In alignment with the proposition of organizational resources as important leadership preconditions, Krick et al. (2022) found health-oriented HRM strategies to be organizational resources that positively influenced health-oriented leadership behaviors. According to social exchange theory (Blau, 1964), leaders are more willing to show health-oriented leadership behaviors when the organization prioritizes employee well-being by providing organizational resources like HRM strategies or OHC (Zohar, 2010; Zohar & Luria, 2005). Thus, OHC should promote leaders' sense-making process in the direction of health orientation and should encourage health-oriented behaviors (Kaluza et al., 2020).

H1: OHC (at T1) is positively related to health-oriented leadership (at T2).

2.2 Health-Oriented Leadership and Employee Well-Being

Leaders influence the well-being of their employees directly via their direct behavior toward their employees (Perko et al., 2016) and indirectly via the design of job characteristics (Teetzen et al., 2022). We also expect health-oriented leaders to positively influence employee well-being in various ways. They provide orientation for employees regarding health-related organizational norms and priorities, which enhances employee well-being and reduces stressors that impair well-being (e.g., M. Arnold & Rigotti, 2021). At the same time, they function as role models, which encourage employees to mimic the health-oriented behaviors leaders are motivated to show by OHC organizations and will increase well-being in the organization at large (e.g., Dietz et al., 2020). We hypothesize the following:

H2: Health-oriented leadership (at T2) is a) positively related to job satisfaction and b) negatively related to the emotional exhaustion of employees (at T3).

2.3 The Mediation Pathway between OHC and Employee Well-Being via Health-Oriented Leadership

Although research shows that OHC is positively related to employee well-being (e.g., Zweber et al., 2015), the mechanism between these two variables has seldom been studied (Kaluza et al., 2020; Schulz et al., 2017). The proposed mediation between OHC and employee well-being via health-oriented leadership is again based on COR theory (Hobfoll, 1989). The central idea of the theory is that people strive to obtain and preserve resources to acquire new ones. When multiple resources are gained, they travel in packs to form resource caravans (Hobfoll et al., 2018). For employees, the acquisition of multiple resources such as OHC and health-oriented leadership functions as a facet-specific resource caravan, which should promote job satisfaction. In case of emotional exhaustion, resource loss threats are high (Gorgievski & Hobfoll, 2008). In this situation, resource gain increases in importance (Hobfoll et al., 2018).

Dollard, Dormann, and Idris (2019) stress that organizational climate affects worker psychological health by "shaping the social relations at work" (p. 10). This directly emphasizes the important role of leadership (Zohar & Luria, 2005), since leaders function as seminal figures and implementors of the organizational goals, priorities, and values and communicate which

behaviors will be rewarded and which will be sanctioned (Dietz et al., 2020; Dollard et al., 2019). As Gurt et al. (2011) stated, an organization striving for health promotion must create a good fit between organizational values and leader behaviors to reach its desired goals.

Through the mechanisms outlined above, we expect the relationship between OHC and employee well-being to be mediated by health-oriented leadership:

H3: OHC (at T1) has a) positive indirect effects on job satisfaction (at T3) and b) negative indirect effects on emotional exhaustion (at T3) by the mediation of health-oriented leadership (at T2).

2.4 The Different Levels of Analysis

Climate perceptions can be conceptualized at different levels: while *psychological climate* ascertains the sense-making process of an individual regarding his or her work environment (i.e., the individual level), the *group-level organizational climate* prescribes the "shared perceptions of employees on organizational policies, practices and procedures" (Loh et al., 2019, S. 443). While climate research becomes increasingly conducted at the group level because climate is often viewed as a group-level phenomenon, researchers on psychological climate have expressed the concern that individual differences in climate perceptions might be lost in this approach. This is why a *simultaneous* examination of these processes seems warranted (e.g., Schulz et al., 2017). Through that, organizational researchers gain knowledge of the empirical effect of "a comparison between individual and group levels of climate" (Loh et al., 2019, S. 444). Moreover, intergroup dynamics cannot be equalized to processes within groups, and this differentiation reveals different social processes that might take place (intergroup dynamics vs. within-team processes) (van Knippenberg, 2003).

The differentiation of levels of analysis makes it possible to consider the grounding of variance in the criterion variables due to between-group effects (i.e., the team) and within-group effects (i.e. individual differences or social processes) (Zhang et al., 2009) and provides evidence of which level of analysis is more relevant for the mediating mechanism of health-oriented leadership in the relationship between OHC and employee well-being. In the only study known to us that simultaneously examines within-team and between-team processes regarding OHC, Schulz et al. (2017) found between-team health climate to relate to several employee health outcomes beyond within-team health climate perceptions. Thus, in this study, we explicitly differentiate the mechanisms between and within teams regarding OHC and health-oriented leadership to draw implications for theory and practice as to different relational patterns between levels:

Research Question 1: *Is the mediating pathway within teams of different strengths than that between teams?*

3 Methods

3.1 Procedure

The data of this study were part of a larger research project on an intervention regarding supportive leadership in daycare centers in Germany. The objectives and usages of other studies of the dataset can be viewed in the supplemental material (S1 Table).

Invited to the data survey of the research project were leaders of 80 childcare centers and their teams. They had an overarching union, which oversaw the organizations' health management system and steered the information policy regarding health-related topics via several division managers, newsletters and regular staff meetings. Data was gathered by means of a paper-pencil survey where all participants created their own code that allowed us to match individual responses to a team identifier. We collected data at three time points with time lags of six months between each data collection.

The leaders of part of the sample (30 leaders of 243 employees) participated in an intervention for supportive leadership training between T1 and T2. We conducted additional analyses to control for differences between the groups whose leaders had participated in the intervention and those whose leaders had not. These analyses gave no evidence of a difference between groups and can be viewed in the supplemental material (S2 Table).

3.2 Participants

Our final sample comprised 423 employees in 74 teams. From the originally invited 664 employees of 80 teams, 500 participants from 77 teams responded at T1, 362 participants from 74 teams responded at T2, and 321 participants from 70 teams responded at T3, yielding an average attrition rate of 41% over all time points. We excluded participants who (1) were trainees or interns to ensure a close enough working relationship with the leader and organization or (2) could not be matched to a team. We also excluded two teams due to insufficient team size (< 3 members). Team sizes ranged from 3–17 participants across all time points, with an average of 6.5. We compared participants who participated at T1 and T2 with those who participated only at T1 regarding OHC, health-oriented leadership, and employee well-being at T1 via t-tests. There were no differences between the subsamples found. We applied the same procedure to those participants who participated at T2 and T3 versus those only participating at T2 regarding the T2 variables. Again, no differences were found.

The final sample was 98% female and the participants were 17–65 years old, with 13% nonpedagogical personnel and 77% pedagogical personnel, 50% worked full time, 31% worked part-time with more than 20 hours and 18% less than 20 hours. The job tenure ranged between 1 and 44 years and employees worked between 1 and 6 years with their leaders.

3.3 Measures

3.3.1 Organizational Health Climate

We measured OHC perceptions of employees at T1 and T2 via six items of a measurement that was adapted to the context of social care from Ducki (2000). To make the instrument fitting to the daily language of our context, we added expressions such as "*our union*" instead of "*our*

organization" (response format: 5-point scale with 1 = *does not apply at all* to 5 = *applies very often*). A sample item was, "Our union attaches great importance to the well-being and health of its employees."

3.3.2 Health-Oriented Leadership

We measured health-oriented leadership via follower reports at T1 and T2 and used four behavior- and relationship-oriented items of the health-oriented leadership scale by Franke et al. (2014) with a 5-point answering scale (1 = (almost) never to 5 = (almost) always). Sample items were, "My supervisor reduces stress through improvements in the area of work organization (e.g., setting priorities, ensuring undisturbed work, daily planning)" and "My supervisor ensures that everyone interacts positively."

3.3.3 Job Satisfaction

Follower job satisfaction was assessed with six items from the Copenhagen Psychosocial Questionnaire (Kristensen, 2000) at T1 and T3 with a 5-point answering scale (1= not at all satisfied to 5 = very satisfied). A sample item was, "In general, how pleased are you with your work?"

3.3.4 Emotional Exhaustion

We measured emotional exhaustion with five items from the Maslach Burnout Inventory (Maslach & Jackson, 1981) at T1 and T3. The responses were given on a 6-point scale (1 = never to 6 = often). A sample item was, "I feel burned out from my work."

3.4 Statistical Analyses

3.4.1 Aggregation Procedure

To justify the aggregation of data, we calculated several statistics to examine both within- and between-group variance. Regarding OHC, a one-way between-group ANOVA showed sufficient between-group variance ($F(76, 414) = 1.59$, $p = .003$) as well as within-group variability (Newman & Sin, 2020) with an average $r_{wg(j)} = .73$, reaching the recommended threshold of $r_{wg(j)} > .70$ (LeBreton & Senter, 2008). An ICC[1] of .08 at T1 showed a low but adequate variance between groups for the climate measure (Bliese, 2000). The ICC [2] was .37 at T1 and indicated low reliability; however, one should not refrain from conducting a multilevel analysis due to a low ICC 2 value (e.g., Aguinis et al., 2013). Since we observed both the Level-1 and Level-2 climate in this study and all other values were in the expected direction, we decided to proceed with the aggregation of the climate measure. For leadership, the between-group variance and within-group variability were adequate, indicated by a significant one-way between-group ANOVA ($F(76, 408) = 3.36$, $p = .001$) and an average $r_{wg(j)} = .75$. An ICC[1] = .30 and ICC[2] = .71 also indicated moderate variance between groups and good reliability of the group variable.

3.4.2 Statistical Analyses

Our data had a nested structure with employees nested in teams. The aggregated team variables (between-team OHC and between-team health-oriented leadership) were measured at Level 2, while job satisfaction and emotional exhaustion of employees and within-team predictors were measured at Level 1.

To test our hypotheses, we used multilevel structural equation modeling (MSEM, Preacher et al., 2011) with a maximum likelihood estimator. The MSEM approach separates within and between components of all variables and, thus, allows for distinct investigation of the direct and indirect effects at each level (Preacher et al., 2011). To test our hypotheses, we specified a 2-2-1 mediation model following the approach outlined by Hofmann and Gavin (1998). We group-mean centered the Level-1 variables and reintroduced the means of those variables back at Level 2. This approach allowed us to separately examine between- and within-group effects. To test indirect effects, we calculated Monte Carlo confidence intervals as recommended by Hayes (2017). The computations were executed in MPlus (Muthén & Muthén, 1998).

4 Results

Descriptive statistics, correlations, and reliabilities can be found in Table 1. All correlations were in the expected direction.

Table 1. Means, standard deviations, reliabilities, and correlations.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. OHC (T1)	2.94	.95	*(.95)*	.50**	.42**	.39**	-.51**	-.39**	.67**	.44**
2. OHC (T2)	3.05	.97	.66**	*(.95)*	.21**	.29**	-.36**	-.26**	.33**	.20**
3. HoL (T1)	3.55	.96	.38**	.21*	*(.86)*	.72**	-.44**	-.09	.62**	.43**
4. HoL (T2)	3.57	.89	.37**	.31**	.66**	*(.86)*	-.33**	-.16**	.49**	.42**
5. Exhaustion (T1)	3.56	1.31	-.57**	-.48**	-.36**	-.34**	*(.94)*	.50**	-.69**	-.53**
6. Exhaustion (T3)	3.69	1.30	-.51**	-.45**	-.23**	-.28**	.79**	*(.95)*	-.41**	-.66**
7. JS (T1)	3.69	.75	.61**	.48**	.49**	.41**	-.69**	-.59**	*(.91)*	.62**
8. JS (T3)	3.67	.73	.53**	.46**	.48**	.47**	-.64**	-.66**	.78**	*(.93)*

Note. JS = Job satisfaction, HoL = Health-oriented leadership; within-level correlations (N = 423 employees) are below the diagonal and between-level correlations (74 teams) are above the diagonal; (ω) are given in parentheses along the diagonal; * $p < .05$. ** $p < .01$.

4.1 Results of the Multilevel Structural Equation Model

To test our hypotheses, we fitted the model indicated in Figure 2. The model showed a good fit to the data ($\chi^2 = 8.478$, df =6, p = .21, CFI = .99, TLI = .97, RMSEA = .03). The effects of the model can be found in Table 2. As hypothesized, OHC at T1 had a positive effect on health-oriented leadership at T2 and was stronger between teams ($\gamma = .34$, p = .01, CI_{95} [.08; .60]) than within teams ($\gamma = .09$, p = .12, CI_{95} [-.02; .21]). This supports hypothesis H1 at the between-team level.

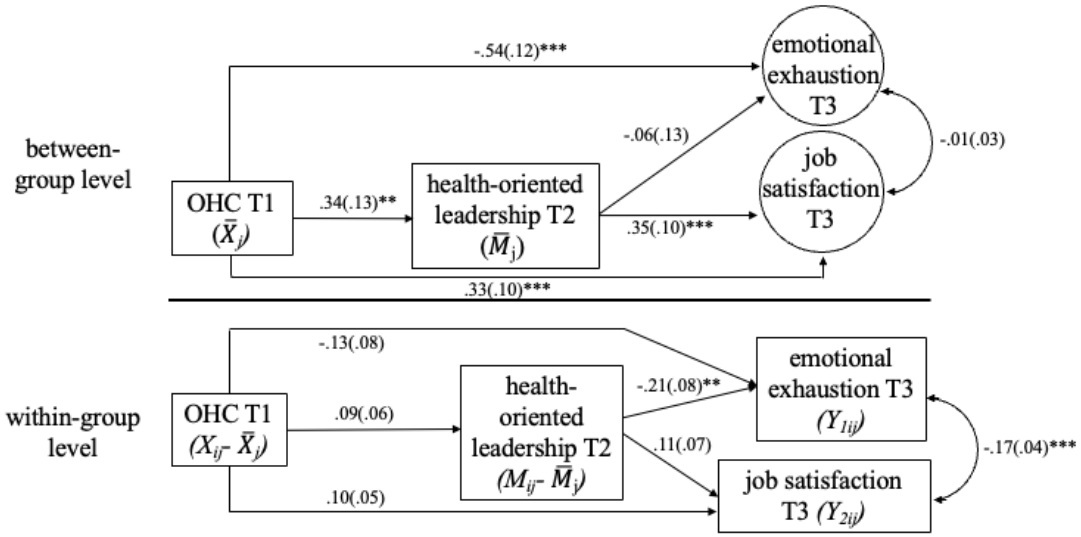

Figure 2. Results from the multilevel path model with unstandardized regression coefficients and standard errors in parentheses. Relationships with control variables and autoregressive effects can be viewed in Table 2. * $p < .05$, ** $p < .01$, *** $p < .001$

Health-oriented leadership at T2 was related to job satisfaction at T3 between teams ($\gamma = .35$, $p = .001$, CI_{95} [.16; .53]) but not within teams ($\gamma = .11$, $p = .15$, CI_{95} [-.04; .25]) while being negatively related to emotional exhaustion within teams ($\gamma = -.21$, $p = .007$, CI_{95} [-.35; -.06]), but not between teams ($\gamma = -.06$, $p = .63$, CI_{95} [-.31; .19]). Thus, hypothesis H2a was partially supported between teams and H2b was partially supported within teams.

H3 asked for a mediation effect of OHC on a) job satisfaction and b) emotional exhaustion via health-oriented leadership and could only be supported for job satisfaction at the between-team level ($\gamma = .12$, $p = .03$, CI_{95} [.01; .22]). The indirect within-team mediation effect was nonsignificant ($\gamma = .01$, $p = .35$, CI_{95} [-.01; .03]). Thus, H3a was supported. For emotional exhaustion, both the indirect between-team effect ($\gamma = -.02$, $p = .63$, CI_{95} [-.10; .06]) and the indirect within-team effect were nonsignificant ($\gamma = -.02$, $p = .23$, CI_{95} [-.05; .01]). Thus, H3b could not be supported.

Responding to Research Question 1, the mediation pathway between teams was significantly stronger than that within teams for the outcome of job satisfaction ($Diff_{indJS} = Ind_{JSWithin} - Ind_{JSbetween} = .01\text{-}.116 = -.11$, $p = .04$, $MCCI_{95}$ [-.22; -.01].

5 Discussion

Our study aimed to identify organizational antecedents of health-oriented leadership and to explore the underlying mechanisms of the relationship between OHC and employee well-being in a facet-specific manner within and between teams in a longitudinal multilevel analysis with three measurement points. Our results showed that OHC can be viewed as an antecedent of health-oriented leadership at the between-team level. We also found health-oriented leadership to be an important mechanism by which OHC relates to job satisfaction of employees at the between-team level, with the effect being significantly stronger at the between-team than at the

within-team level. We found no mediation effect of health-oriented leadership on the relationship between OHC and emotional exhaustion.

5.1 Theoretical Implications

Recent research highlights the importance of examining relationships in their contextual environment (Hobfoll et al., 2018; Inceoglu et al., 2021). The larger organizational context must be considered when seeking to influence (health-oriented) behavior (e.g., Sharma, 2018). Thus, leaders need organizational prerequisites that support their way of leading for them to be effective and supportive. Corroborating this assumption and based on corollary one of the COR theory, hypothesis H1, linking OHC to health-oriented leadership, was supported at the between-team level. Thus, organizational climate functions as a resource for health-oriented leaders and grants them the opportunity to use and distribute those gained resources to their teams. Organizational climate thereby links the larger organizational context with the internal functioning of the organization (Dollard et al., 2019). With this finding, we contribute to the existing research by widening the lens to an important precondition of (health-oriented) leadership.

This finding also contributes to the discussion of the ordering of the two variables of organizational climate and leadership. While initial research on organizational climate often conceptualized leaders as the creators of organizational climate (e.g., Clarke, 2013), recent research also identified organizational climate to be a plausible, if not necessary, precondition of leader actions (Biron et al., 2018; Kaluza et al., 2020; Yulita et al., 2017). Our analysis confirmed these initial studies and showed that the climate–leadership link is similarly plausible to the leadership–climate link. Future research must reveal if the ordering is reciprocal and if there are facet-specific differences for specific climate and leadership measures.

Our research further revealed that there is a difference in the OHC–health-oriented leadership relationship regarding different levels of analysis. A large share of the variance in health-oriented leadership is explained at the group level, which highlights the meaning of leadership for teams with regard to the conveyance of organizational climate.

In our second hypothesis, we postulated a positive influence of health-oriented leadership on employee well-being. While health-oriented leadership was positively related to job satisfaction at the between-team level, partially supporting H2a, its positive influence on emotional exhaustion (H2b) was only found at the within-team level, partially supporting H2b. The finding hints at the different mechanisms that influence employee well-being at the distinct levels of analysis (Wang & Howell, 2010): While job satisfaction is enhanced by positive influences of the whole team, for example, by improving team processes, appreciating the whole team for good work, or decreasing disruptive job demands for the team (Braun et al., 2013), emotional exhaustion seems to be a very individual perception that is instead based on the personal experience between the leader and the individual team members rather than on a group perception. It is not easy for leaders to consider all team members' higher-level needs equally and, thus, influence their feelings of exhaustion in a similar fashion (K. A. Arnold, 2017). Corroborating this, studies have found lower ICCs for mental health than for other variables, suggesting that they are not significantly determined by group membership

Table 2. Results of the multilevel structural equation models.

				within/between group			γ(SE)		
Models	-2LL	Δdf	p	σ^2_{HoL}	σ^2_{EE}	σ^2_{JS}	HoL (T2)	EE (T3)	JS (T3)
Unconditional model	1563.85		.000	.38/.37	1.54/.04	.42/.10			
Within:									
a_1-path									
OHC (T1) → HoL (T2)	1542.76	1	.000	.35/.37	1.54/.04	.42/.10	.09(.06)		
c_1'-path									
OHC (T1) → EE (T3)	1491.52	2	.000	.35/.38	1.27/.04			-.13(.08)	
c_2'-path									
OHC (T1) → JS (T3)						.33/.11			.10(.05)
b_1-path									
HoL (T2) → EE (T3)	1483.62	2	.000	.35/.37	1.23/.04			-.21(.08)**	
b_2-path									
HoL(T2) → JS (T3)						.31/.11			.11(.07)
Stabilities:									
HoL (T1)	1293.82	3	.000	.30/.38			.34(.06)***		
JS (T1)						.20/.11			60(.05)***
EE (T1)					.67/.11			.65(.05)***	
between:									
a_2-path									
OHC (T1) → HoL (T2)	1288.23	1	.000	.30/.35	.67/.11	.20/.11	.34(.13)**		
c_3'-path									
OHC (T1) → EE (T3)	1261.87	2	.000	.30/.35	.66/.04			-.54(.12)***	
c_4'-path									
OHC (T1) → JS (T3)						.19/.06			33(.10)***
b_3-path									
HoL (T2) → EE (T3)	1242.09	2	.000	.30/.35	.66/.03			-.06(.13)	
b_4-path									
HoL(T2) → JS (T3)						.20/.03			.35(.10)***

	γ [$MCCI_{95}$]
Within indirect effects	
OHC (T1) → HoL (T2) → EE (T3) (a_1 x b_1)	-.02[-.06; .003]
OHC (T1) → HoL (T2) → JS (T3) (a_1 x b_2)	.01[-.003; 04]
Between indirect effects	
OHC (T1) → HoL (T2) → EE (T3) (a_2 x b_3)	-.02[-.12;.07]
OHC (T1) → HoL (T2) → JS (T3) (a_2 x b_4)	.12[.02;.23]
Difference test of within and between indirect effects of JS	
Ind. JS within - ind. JS between	-.11 [-.22;-.008]

Note: OHC = organizational health climate; HoL = health-oriented leadership; EE = employee emotional exhaustion; JS = employee job satisfaction; -2LL= -2*Log-Likelihood; Δdf = change in degrees of freedom; σ^2 = residual variance; and $MCCI_{95}$ = Monte Carlo confidence intervals. Displayed are unstandardized estimates.
* $p < .05$, ** $p < .01$, *** $p < .001$.

(Vonderlin et al., 2021). In sum, our differential findings on the different levels of analysis highlight the importance of examining level-specific mechanisms and outcomes.

Our mediation hypothesis regarding OHC and job satisfaction was supported at the between-team level, although not at the within-team level (partially supporting H3a). This finding identifies a group-level mechanism by which climate perceptions influence employee job satisfaction. Previous research showed that organizational factors influence employee behavior by a leader whose behavior is aligned with these organizational factors (Dietz et al., 2020). Thus, health-oriented leadership behaviors are a way through which health-related values and priorities of the organization trickle down to employees (Kaluza et al., 2020). This is in line with COR theory because employees "employ key resources not only to respond to stress but also to build a reservoir of sustaining resources for times of future need" (p. 104, Hobfoll et al., 2018). Thus, the distal organizational resource of OHC enhances the more proximal resource of health-oriented leadership, which creates a resource caravan passageway for employees and, thus, enhances job satisfaction (Hobfoll, 2012).

We further concretized our findings by showing that the mediating mechanism is stronger at the between-team level (answering Research Question 1), which corroborates research by Schulz et al. (2017). Leaders in childcare settings seem to emphasize the consequences and possibilities of OHC for their center, which transfers to employees focusing more on the "we" than the "I", which results in greater job satisfaction, possibly by a higher identification with the work group (Riketta & van Dick, 2005). According to social identity theory (Ashforth & Mael, 1989), job satisfaction increases with the degree of identification with the organization because important human needs are met (van Dick & Haslam, 2012) and because a sharedness of values and norms by the group and shared group behaviors positively enhance individual outcomes (Häusser et al., 2020). This should be even more the case when organizational values and priorities and leadership behaviors are aligned in words and actions (Yulita et al., 2017). Individual perceptions in the team seem to fluctuate more easily, contingent upon the overall team atmosphere (Inceoglu et al., 2021).

The reason we did not find a significant mediation effect for emotional exhaustion (not supporting H3b) might have been the relatively high autoregressive effect of emotional exhaustion, indicating great inertia of emotional exhaustion within the measured timeframe (Hamaker & Grasman, 2015) and the already mentioned difficulty of attending to all employees equally in a group. Similar to our findings, Yulita et al. (2017) found no significant relationship between enacted managerial support and emotional exhaustion. Moreover, previous research has shown that job demands, rather than job resources (such as health-oriented leadership) were the main predictors of emotional exhaustion (Dollard, Opie, et al., 2012; Dollard & Bakker, 2010).

5.2 Limitations and implications for future research

The results of our study must be seen in light of several limitations. Despite a multilevel design, which reduces common-method variance (Loh et al., 2019), we had a single-source design. Thus, we cannot rule out that common-method bias inflated the inspected relationships (Podsakoff et al., 2003). Even though one might intuitively point to a leader's self-rated leadership

measurement to acquaint a multisource design, previous research has shown that supervisors' self-ratings of health-oriented leadership did not influence the relationship between employee ratings of health-oriented leadership and their mental distress, thus, consciously avoiding a leadership self-rating (Vonderlin et al., 2021). However, it would be valuable to integrate other-rated moderators to control for bias, for example leaders' resources (i.e., skills) (Pischel et al., 2022).

Furthermore, in terms of the ordering of the variables, our sample power did not suffice to integrate a cross-lagged panel model. Since previous research found evidence of the leadership–climate link (Schneider et al., 2017) and the climate–leadership link (e.g., Biron et al., 2018), the direction of effects is not yet certain, and it could well be a reciprocal one. Thus, we need additional research to provide information on this topic. Future investigations should be especially sensitive to the facet-specificity of climate and leadership when aiming to explore the ordering of the variables (e.g., a leadership climate as a specific climate facet; Chen & Bliese, 2002).

For the generalizability of the results, one has to keep in mind the industrial sector and the associated context (Inceoglu et al., 2021). Our study examined childcare centers and, thus, the social care context. However, for generalizability to other contexts, one must consider the potentially different mechanisms of conveying organizational climate and practicing health-oriented leadership in the organization (e.g., different communication patterns and collaboration schemes).

Furthermore, while we found differing results for the two levels of analysis, we did not test the nature of these differences. Future research should work on identifying the conditions on which these differences are grounded.

5.3 Practical implications

Interventions designed to improve employee mental health often focus on the individual or the personality and skills of the leader and not on organizational factors (Stuber et al., 2021). This circumstance involves the risk of ceiling effects when the skill set of a leader cannot be improved any further (Hammer et al., 2019). Our research provides support for the assumption that the value of employee job satisfaction is anchored in the organizational culture and that this can then be transferred to employees through leader behaviors (Parker et al., 2017). Thus, the organizational antecedents on which leader behavior forms must be considered when planning to influence leader behaviors (Nielsen & Miraglia, 2017).

Furthermore, knowledge about the social processes that influence how OHC and health-oriented leadership are perceived by employees is valuable to decide on the priorities in management behavior. Our research showed that employee job satisfaction is mainly influenced by a shared perception of the team regarding OHC and health-oriented leadership. Thus, addressing the team in a team-oriented way (e.g., providing information to the whole team, making decisions in participatory team meetings, providing transparency for the whole team) would be a good skill set to meet team needs regarding job satisfaction. At the same time, our study showed that impaired well-being (i.e., emotional exhaustion) cannot be influenced via health-oriented leadership at the team level. Thus, leaders can react more precisely to the needs of the team when

they have a precise goal and familiar knowledge about the mechanisms by which OHC and health-oriented leadership are conveyed to reach this goal.

6 Conclusion

This study identified OHC as a relevant organizational antecedent of health-oriented leadership at the team level and complemented existing research on the leadership–climate link (e.g., Loh et al., 2021) and on facet specificity (e.g., Yulita et al., 2017). We also identified shared perceptions of health-oriented leadership as a mechanism by which shared perceptions of OHC influence employee job satisfaction more than individual perceptions. This finding suggests that values and priorities of the organization are coming to life via leadership behaviors and that leaders are a focal way to enact organizational climate. Thus, a simultaneous and differentiated consideration of levels of analysis appears warranted.

References

Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-Practice Recommendations for Estimating Cross-Level Interaction Effects Using Multilevel Modeling. *Journal of Management*, *39*(6), 1490–1528. https://doi.org/10.1177/0149206313478188

Alilyyani, B., Wong, C. A., & Cummings, G. (2018). Antecedents, mediators, and outcomes of authentic leadership in healthcare: A systematic review. *International Journal of Nursing Studies*, *83*, 34–64. https://doi.org/10.1016/j.ijnurstu.2018.04.001

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

Arnold, M., & Rigotti, T. (2020). The Leader in the Spotlight: Health-oriented Leadership and its Antecedents and Outcomes. *Academy of Management Proceedings*, *1*. https://doi.org/10.5465/AMBPP.2020.16724abstract

Arnold, M., & Rigotti, T. (2021). Is it Getting Better or Worse? Health-Oriented Leadership and Psychological Capital as Resources for Sustained Health in Newcomers. *Applied Psychology*, *70*(2), 709–737. https://doi.org/10.1111/apps.12248

Ashforth, B. E., & Mael, F. (1989). Social Identity Theory and the Organization. *Academy of Management Review*, *14*(1), 20–39.

Biron, C., Parent-Lamarche, A., Ivers, H., & Baril-Gingras, G. (2018). Do as you say: The effects of psychosocial safety climate on managerial quality in an organizational health intervention. *International Journal of Workplace Health Management*, *11*(4), 228–244. https://doi.org/10.1108/IJWHM-01-2018-0009

Blau, P. (1964). *Power and exchange in social life*. John Wiley & Sons.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Hrsg.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (S. 349–381). Jossey-Bass.

Braun, S., Peus, C., Weisweiler, S., & Frey, D. (2013). Transformational leadership, job satisfaction, and team performance: A multilevel mediation model of trust. *The Leadership Quarterly*, *24*(1), 270–283. https://doi.org/10.1016/j.leaqua.2012.11.006

Chen, G., & Bliese, P. D. (2002). The role of different levels of leadership in predicting self- and collective efficacy: Evidence for discontinuity. *Journal of Applied Psychology*, *87*(3), 549–556. https://doi.org/10.1037/0021-9010.87.3.549

Clarke, S. (2006). The relationship between safety climate and safety performance: A meta-analytic review. *Journal of Occupational Health Psychology*, *11*(4), 315–327. https://doi.org/10.1037/1076-8998.11.4.315

Clarke, S. (2013). Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours. *Journal of Occupational and Organizational Psychology*, *86*(1), 22–49. https://doi.org/10.1111/j.2044-8325.2012.02064.x

Courtright, S. H., Gardner, R. G., Smith, T. A., McCormick, B. W., & Colbert, A. E. (2016). My family made me do it: A cross-domain, self-regulatory perspective on antecedents to abusive supervision. *Academy of Management Journal*, *59*(5), 1630–1652. https://www.jstor.org/stable/26157376

Dietz, C., Zacher, H., Scheel, T., Otto, K., & Rigotti, T. (2020). Leaders as role models: Effects of leader presenteeism on employee presenteeism and sick leave. *Work & Stress*, *34*(3), 300–322. https://doi.org/10.1080/02678373.2020.1728420

Dollard, M. F., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, *83*(3), 579–599. https://doi.org/10.1348/096317909X470690

Dollard, M. F., Dormann, C., & Idris, M. A. (2019). Psychosocial Safety Climate: A New Work Stress Theory and Implications for Method. In *Psychosocial Safety Climate—A New Work Stress Theory* (S. 3–30). Springer Nature Switzerland AG.

Dollard, M. F., Opie, T., Lenthall, S., Wakerman, J., Knight, S., Dunn, S., Rickard, G., & MacLeod, M. (2012). Psychosocial safety climate as an antecedent of work characteristics and psychological strain: A multilevel model. *Work & Stress*, *26*(4), 385–404. https://doi.org/10.1080/02678373.2012.734154

Dollard, M. F., Tuckey, M. R., & Dormann, C. (2012). Psychosocial safety climate moderates the job demand–resource interaction in predicting workgroup distress. *Accident Analysis & Prevention*, *45*, 694–704. https://doi.org/10.1016/j.aap.2011.09.042

Ducki, A. (2000). *Diagnose gesundheitsförderlicher Arbeit. Eine Gesamtstrategie zur betrieblichen Gesundheitsanalyse [Diagnosis of health-promoting work. A holistic strategy of an occupational health-analysis]*. vdf Hochschulverlag.

Franke, F., Felfe, J., & Pundt, A. (2014). The Impact of Health-Oriented Leadership on Follower Health: Development and Test of a New Instrument Measuring Health-Promoting Leadership. *German Journal of Human Resource Management*, *28*(1–2), 139–161. https://doi.org/10.1177/239700221402800108

Gorgievski, M. J., & Hobfoll, S. E. (2008). Work can burn us out or fire us up: Conservation of resources in burnout and engagement. In *Handbook of stress and burnout in health care.* Nova Science Publishers.

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

Hamaker, E. L., & Grasman, R. P. P. P. (2015). To center or not to center? Investigating inertia with a multilevel autoregressive model. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01492

Hammer, L. B., Truxillo, D. M., Bodner, T., Pytlovany, A. C., & Richman, A. (2019). Exploration of the impact of organisational context on a workplace safety and health intervention. *Work & Stress*, *33*(2), 192–210. https://doi.org/10.1080/02678373.2018.1496159

Hauff, S., Krick, A., Klebe, L., & Felfe, J. (2022). High-Performance Work Practices and Employee Wellbeing—Does Health-Oriented Leadership Make a Difference? *Frontiers in Psychology*, *13*, 833028. https://doi.org/10.3389/fpsyg.2022.833028

Häusser, J. A., Junker, N. M., & Dick, R. (2020). The how and the when of the social cure: A conceptual model of group- and individual-level mechanisms linking social identity to health and well-being. *European Journal of Social Psychology*, *50*(4), 721–732. https://doi.org/10.1002/ejsp.2668

Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis—A Regression-Based Approach*. Guilford Press.

Hobfoll, S. E. (1989). Conservation of Resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524.

Hobfoll, S. E. (2012). Conservation of Resources and Disaster in Cultural Context: The Caravans and Passageways for Resources. *Psychiatry: Interpersonal and Biological Processes*, *75*(3), 227–232. https://doi.org/10.1521/psyc.2012.75.3.227

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

Hofmann, D. A., & Gavin, M. B. (1998). Centering Decisions in Hierarchical Linear Models: Implications for Research in Organizations. *Journal of Management*, *24*(5), 20.

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

Kaluza, A. J., Schuh, S. C., Kern, M., Xin, K., & Dick, R. (2020). How do leaders' perceptions of organizational health climate shape employee exhaustion and engagement? Toward a cascading-effects model. *Human Resource Management*, *59*(4), 359–377. https://doi.org/10.1002/hrm.22000

Krick, A., Felfe, J., Hauff, S., & Renner, K.-H. (2022). Facilitating Health-Oriented Leadership from a Leader's Perspective: Antecedents at the Organizational, Workplace, and Individual Level. *Zeitschrift Für Arbeits- Und Organisationspsychologie A&O*, *66*(4), 213–225. https://doi.org/10.1026/0932-4089/a000397

Kristensen, T. S. (2000). *A new tool for assessing psychosocial factors at work: The Copenhagen Psychosocial Questionnaire.* National Institute for Health.

LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 Questions About Interrater Reliability and Interrater Agreement. *Organizational Research Methods*, *11*(4), 815–852. https://doi.org/10.1177/1094428106296642

Loh, M. Y., Dollard, M. F., McLinton, S. S., & Tuckey, M. R. (2021). How psychosocial safety climate (PSC) gets stronger over time: A first look at leadership and climate strength. *Journal of Occupational Health Psychology*, *26*(6), 522–536. https://doi.org/10.1037/ocp0000308

Loh, M. Y., Idris, M. A., Dormann, C., & Muhamad, H. (2019). Organisational climate and employee health outcomes: A systematic review. *Safety Science*, *118*, 442–452. https://doi.org/10.1016/j.ssci.2019.05.052

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, *2*(2), 99–113. https://doi.org/10.1002/job.4030020205

Montano, D., Reeske, A., Franke, F., & Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective: Leadership and Followers' Mental Health. *Journal of Organizational Behavior*, *38*(3), 327–350. https://doi.org/10.1002/job.2124

Muthén, L. K., & Muthén, B. O. (1998). *Mplus User's Guide.* (Eight Edition).

Newman, D. A., & Sin, H.-P. (2020). Within-Group Agreement (r_{WG}): Two Theoretical Parameters and their Estimators. *Organizational Research Methods*, *23*(1), 30–64. https://doi.org/10.1177/1094428118809504

Nielsen, K., & Miraglia, M. (2017). What works for whom in which circumstances? On the need to move beyond the 'what works?' question in organizational intervention research. *Human Relations*, *70*(1), 40–62. https://doi.org/10.1177/0018726716670226

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. https://doi.org/10.1080/02678373.2019.1592263

Oc, B. (2018). Contextual leadership: A systematic review of how contextual factors shape leadership and its outcomes. *The Leadership Quarterly*, *29*(1), 218–235. https://doi.org/10.1016/j.leaqua.2017.12.004

Parker, S. K., Van den Broeck, A., & Holman, D. (2017). Work Design Influences: A Synthesis of Multilevel Factors that Affect the Design of Jobs. *Academy of Management Annals*, *11*(1), 267–308. https://doi.org/10.5465/annals.2014.0054

Perko, K., Kinnunen, U., Tolvanen, A., & Feldt, T. (2016). Investigating occupational well-being and leadership from a person-centred longitudinal approach: Congruence of well-being and perceived leadership. *European Journal of Work and Organizational Psychology*, *25*(1), 105–119. https://doi.org/10.1080/1359432X.2015.1011136

Pischel, S., Felfe, J., & Klebe, L. (2022). "Should I Further Engage in Staff Care?": Employees' Disclosure, Leaders' Skills and Goal Conflict as Antecedents of Health-Oriented Leadership. *International Journal of Environmental Research and Public Health*, *20*(1), 162. https://doi.org/10.3390/ijerph20010162

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Preacher, K. J., Zhang, Z., & Zyphur, M. J. (2011). Alternative Methods for Assessing Mediation in Multilevel Data: The Advantages of Multilevel SEM. *Structural Equation Modeling: A Multidisciplinary Journal*, *18*(2), 161–182. https://doi.org/10.1080/10705511.2011.557329

Riketta, M., & van Dick, R. (2005). Foci of attachment in organizations: A meta-analytic comparison of the strength and correlates of workgroup versus organizational identification and commitment. *Journal of Vocational Behavior*, *67*(3), 490–510. https://doi.org/10.1016/j.jvb.2004.06.001

Schneider, B., Gonzáles-Romá, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology*, *102*(3), 468–482. https://doi.org/10.1037/apl0000090

Schulz, H., Zacher, H., & Lippke, S. (2017). The Importance of Team Health Climate for Health-Related Outcomes of White-Collar Workers. *Frontiers in Psychology*, *08*. https://doi.org/10.3389/fpsyg.2017.00074

Sharma, P. N. (2018). Moving beyond the employee: The role of the organizational context in leader workplace aggression. *The Leadership Quarterly*, *29*(1), 203–217. https://doi.org/10.1016/j.leaqua.2017.12.002

Stuber, F., Seifried-Dübon, T., Rieger, M. A., Gündel, H., Ruhle, S., Zipfel, S., & Junne, F. (2021). The effectiveness of health-oriented leadership interventions for the improvement of mental health of employees in the health care sector: A systematic review. *International Archives of Occupational and Environmental Health*, *94*(2), 203–220. https://doi.org/10.1007/s00420-020-01583-w

Tafvelin, S., Isaksson, K., & Westerberg, K. (2018). The First Year of Service: A Longitudinal Study of Organisational Antecedents of Transformational Leadership in the Social Service Organisations. *The British Journal of Social Work*, *48*(2), 430–448. https://doi.org/10.1093/bjsw/bcx038

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. https://doi.org/10.3390/ijerph19053133

Tuncdogan, A., Acar, O. A., & Stam, D. (2017). Individual differences as antecedents of leader behavior: Towards an understanding of multi-level outcomes. *The Leadership Quarterly*, *28*(1), 40–64. https://doi.org/10.1016/j.leaqua.2016.10.011

van Dick, R., & Haslam, S. A. (2012). Stress and well-being in the workplace: Support for key propositions from the social identity approach. In J. Jetten, C. Haslam, & S. A. Haslam (Hrsg.), *The social cure: Identity, health, and well- being* (S. 175–194). Psychology Press/ Routledge.

van Knippenberg, D. (2003). Intergroup relations in organizations. In M. A. West, D. Tjosvold, & K. G. Smith, *International handbook of organizational teamwork and cooperative working* (S. 381–399). John Wiley & Sons, Inc.

Vonderlin, R., Schmidt, B., Müller, G., Biermann, M., Kleindienst, N., Bohus, M., & Lyssenko, L. (2021). Health-Oriented Leadership and Mental Health From Supervisor and Employee Perspectives: A Multilevel and Multisource Approach. *Frontiers in Psychology*, *11*, 614803. https://doi.org/10.3389/fpsyg.2020.614803

Wang, X.-H. (Frank), & Howell, J. M. (2010). Exploring the dual-level effects of transformational leadership on followers. *Journal of Applied Psychology*, *95*(6), 1134–1144. https://doi.org/10.1037/a0020754

Yulita, Dollard, M. F., & Idris, M. A. (2017). Climate congruence: How espoused psychosocial safety climate and enacted managerial support affect emotional exhaustion and work engagement. *Safety Science*, *96*, 132–142. https://doi.org/10.1016/j.ssci.2017.03.023

Zhang, Z., Zyphur, M. J., & Preacher, K. J. (2009). Testing Multilevel Mediation Using Hierarchical Linear Models: Problems and Solutions. *Organizational Research Methods*, *12*(4), 695–719. https://doi.org/10.1177/1094428108327450

Zohar, D. (2010). Thirty years of safety climate research: Reflections and future directions. *Accident Analysis & Prevention*, *42*(5), 1517–1522. https://doi.org/10.1016/j.aap.2009.12.019

Zohar, D., & Luria, G. (2005). A Multilevel Model of Safety Climate: Cross-Level Relationships Between Organization and Group-Level Climates. *Journal of Applied Psychology*, *90*(4), 616–628. https://doi.org/10.1037/0021-9010.90.4.616

Zweber, Z. M., Henning, R. A., & Magley, V. J. (2016). A practical scale for Multi-Faceted Organizational Health Climate Assessment. *Journal of Occupational Health Psychology*, *21*(2), 250–259. https://doi.org/10.1037/a0039895

Zweber, Z. M., Henning, R. A., Magley, V. J., & Faghri, P. (2015). Considering the Differential Impact of Three Facets of Organizational Health Climate on Employees' Well-Being. *The Scientific World Journal*, *2015*, 1–10. https://doi.org/10.1155/2015/407232

Supplementary Material

Organizational health climate as a precondition for health-oriented leadership: Expanding the link between leadership and employee well-being

1 Data transparency table of multiple articles published from the same dataset in the current study

Table S1. Data transparency table of multiple articles published from the same dataset in the current study

	This publication	**Stein et al. (2021, Journal of Occupational Health Psychology)**	**Stein et al. (2020, Leadership & Organizational Development Journal)**
Study purpose	The examination of the organizational antecedents of health-oriented leadership and the mediating potential of health-oriented leadership in the relationship of organizational health climate and employee well-being with a differentiation within and between teams.	Cluster-randomized field trial examining the effect of supportive leadership training on employee social well-being and employee hedonic well-being.	This study positively links the workload of leaders to the emotional exhaustion of employees by constraining the enactment of social support by the leader.
Theories used	Conservation of Resources Theory, social identity theory.	Conservation of Resources Theory.	Theoretical work on social support, Conservation of Resources Theory.
Constructs/variables	Organizational health climate (T1), health-oriented leadership (T2), and job satisfaction and emotional exhaustion (T3).	Qualitative workload, quantitative workload (T1), LMX quality, emotional exhaustion, job satisfaction, and WHO-5 Well-Being Index (T1-T3).	Workload of leaders and employees, supportive leadership, and emotional exhaustion (T1).

Analysis techniques	Multilevel mediation analysis with structural equation modeling.	Cluster-randomized field trial, analyzed with linear mixed-effects models.	Multilevel regression analyses.
Results	Organizational health climate is an organizational antecedent of health-oriented leadership. There were no mediation effects found between organizational health climate and employee well-being via health-oriented leadership. However, the effect-patterns were very different for the different levels of analysis.	The relationship of LMX quality and emotional exhaustion varied depending on the baseline perceptions of employee quantitative workload. Those with high quantitative workload benefited most from the intervention.	Leader workload was negatively related to the employees' perception of leader support, which in turn was positively related to employee exhaustion.
Theoretical implications	The organizational environment (such as organizational health climate) is an important and so far widely neglected precondition of health-oriented leadership. The study also strengthened the climate–leadership link. The differential results for the different levels of analysis give indication of variable social mechanisms that are at work at the respective levels and call for a more differentiated examination in multilevel work.	Examining a supportive leadership training from a conservation of resources theory perspective, this study showed that the focus on positive employee well-being units (i.e., LMX quality with the leader) should be promoted. It also showed that the training might not be equally effective for everyone but that there are conditions that influence the training effect (i.e., high quantitative workload).	Not only personal attributes, but also environmental factors (i.e., workload) influence the ability of leaders to show social support. Thus, the leaders' work context represents a boundary condition to their ability to show supportive leadership behaviors. A multilevel lens of the conservation of resources theory provides knowledge on the senders of resources.
Practical implications	Organizations should foster organizational antecedents such as an organizational health	Supportive leadership trainings are an effective way to enhance employee well-being in	In addition to training leaders how to be supportive, organizations must widen their

	climate to provide optimal conditions for and encourage health-oriented leadership. Congruence between organizational communication and leadership behavior seems to be important.	organizations and LMX relationships between leaders and employees and are especially supportive for those employees with high quantitative workloads.	lenses to create circumstances under which leaders can also apply this knowledge. The work environment of leaders must be designed to meet these boundary conditions.

2 Supplementary analyses. Analyses of the difference between the group of employees whose leaders participated in a supportive leadership training and the group of employees whose leaders did not.

Group sizes:
Leaders who participated in the intervention (intervention group): 30 leaders of 243 employees;
→ of these, 16 leaders of 92 employees only participated in parts of the intervention.
Leaders, who did not participate in the intervention (control group): 47 leaders of 421 employees (missing values: 10).

Growth model of leadership with the predictor of "treatment condition" for the slope:
We calculated growth curve models of the health-oriented leadership variable, with the condition of treatment as a predictor of this growth.
Model fit of the unconditional model: χ^2 (1) = 0.14, p = .71, RMSEA =.00, SRMR = .01, CFI = 1.0, TLI = .1.01
Model fit of the conditional model: χ^2 (4) = 7.35, p = .12, RMSEA =.07, SRMR = .07, CFI = .99, TLI = .98

S2 Table. Growth model of leadership with the predictor "treatment condition" for the slope.

	Unconditional model *estimate*	Conditional model *estimate*
Means		
Intercept	3.57***	3.57***
Slope	-.02	-.02
Variances		
Intercept	.51***	.61***
Slope	-.02	.03
Treatment		.01

Note: N = 172, treatment = intervention vs. control group, * < .05. ** < .01. *** < .001

Note: the calculations were based on N = 172 due to attrition in the leadership variable along the three time points.

3.3 The third publication of this work

Supportive Leadership Training Effects on Employee Social and Hedonic Well-Being: A Cluster Randomized Controlled Trial

Maie Stein[1], Marlies Schümann[1], Friederike Teetzen[1], Sabine Gregersen[2], Vanessa Begemann[1], and Sylvie Vincent-Höper[1]

[1] Department of Work and Organizational Psychology, Universität Hamburg

[2] Department of Occupational Medicine, Hazardous Substances and Public Health, Institution for Statutory Accident Insurance and Prevention in the Health and Welfare Services (BGW), Hamburg, Germany

Abstract

Drawing on conservation of resources theory, we developed and evaluated a supportive leadership training (SLT) intervention designed to teach leaders ways to be supportive of their employees. Given the important role of supportive leaders in helping employees deal with excessive workloads, we theorized that the beneficial intervention effects on employee well-being would be particularly evident for employees who perceive higher levels of quantitative and qualitative workloads prior to the intervention. Using a cluster randomized controlled field trial, we tested the effects of the SLT on employees' social well-being in terms of leader-member exchange (LMX) quality and employee hedonic well-being, including positive affective well-being, emotional exhaustion, and job satisfaction. The participants in the training were directors of childcare centers in Germany. To rigorously evaluate the intervention effects at the employee level, we collected survey data at baseline, one month postintervention, and six months postintervention, and we used an intent-to-treat approach to analyze the data. A total of 496 employees from 77 childcare centers provided data at baseline, of whom 266 and 226 employees participated in the one-month and six-month surveys, respectively. Linear mixed-effects models showed that the effectiveness of the intervention in terms of LMX quality and emotional exhaustion varied depending on the employees' baseline perceptions of quantitative workloads, such that employees with higher quantitative workloads benefited more from the SLT. The findings of this study improve the understanding of the types of outcomes of SLT and contribute to clarifying for whom SLT is effective.

Keywords: supportive leadership, leadership training intervention, leader-member exchange (LMX) quality, employee well-being, randomized controlled trial

Recognizing the potential of supportive leadership for improving employee well-being, several intervention studies have focused on training leaders how to be supportive of their employees (e.g., Biggs et al., 2014; Hammer et al., 2011). While the few existing studies evaluating supportive leadership training (SLT) programs have generally provided evidence for their beneficial effects on employee well-being (e.g., Hammer et al., 2020; Kossek et al., 2019), scholars have emphasized that more theoretically and methodologically rigorous studies are needed (Hammer et al., 2019). In addition to clarifying the outcomes of SLT, it is important to understand for whom SLT is effective. Ample research has demonstrated that supportive leaders are particularly important for employees struggling with excessive workloads (e.g., Goh et al., 2015; House, 1981), indicating that employees' perceptions of workloads might be an important moderator of SLT effectiveness.

In this study, we aim to clarify the nature and boundary conditions of SLT effectiveness by using conservation of resources (COR) theory (Hobfoll, 1989) as an underlying framework. Building on COR theory, we argue that the developed SLT has positive effects on (1) employees' social well-being in terms of their perceptions of leader-member exchange (LMX) quality and (2) employee hedonic well-being, including positive affective well-being, emotional exhaustion, and job satisfaction. By proposing that resource gain increases in importance under stressful experiences, the resource gain paradox principle of COR theory (Hobfoll et al., 2018) supports the view that the developed SLT may have stronger beneficial effects on well-being for employees who perceive higher workloads.

Using a cluster randomized controlled trial (RCT), we examine the general effectiveness of the SLT and its differential effects on the social and hedonic dimensions of employee well-being depending on employees' baseline perceptions of quantitative and qualitative workloads (see Figure 1). Three waves of data collection allow us to examine when effects due to the SLT occur and how long they persist. To obtain realistic estimates of the SLT effects, we use an intent-to-treat (ITT) approach in which all employees whose leaders were originally assigned to the intervention are included in the analysis.

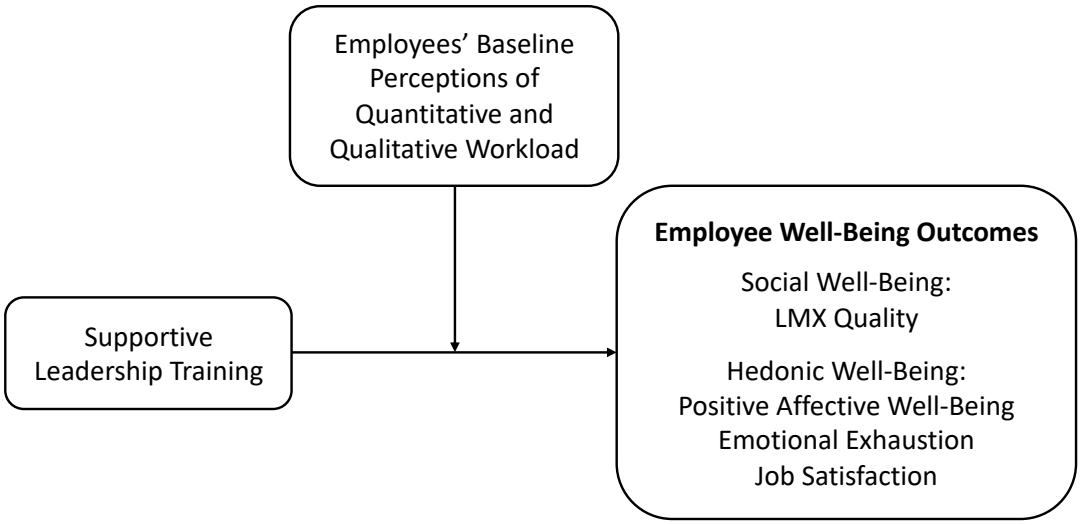

Figure 1. Study Conceptual Model

This study contributes to the SLT literature by showing that COR theory adds a novel perspective to the development and evaluation of SLT. By applying COR theory, we shift the focus from the prevention of negative states (e.g., Hammer et al., 2019) to promoting positive employee well-being through SLT. Specifically, we extend the outcomes of SLT by examining the effects on the social and hedonic dimensions of employee well-being. Furthermore, COR theory allows us to identify relevant moderators of SLT effects on employee well-being. By examining the moderating effects of employees' perceived quantitative and qualitative workloads, we address the need to understand for whom SLT interventions are effective and broaden the scope of employee-level moderators of SLT effectiveness (e.g., Hammer et al., 2011; Kossek et al., 2019). Because experiencing excessive workloads is one of the most salient sources of stress for employees (American Psychological Association, 2018), gaining insights into the moderating effects of employees' workloads on SLT effectiveness has the potential to benefit a large number of employees.

Finally, we contribute to the LMX literature. Although research points to the importance of leadership behavior for LMX development (Dulebohn et al., 2012), the effects of leadership training on LMX quality have received limited attention (Erdogan & Bauer, 2015). By examining LMX quality as an outcome of SLT, we improve the understanding of how to influence LMX quality. In terms of practical implications, gaining clarity regarding the effects of SLT will increase the field's ability to provide organizations with guidance on how to improve employee well-being through leadership training.

Theoretical Background of the Supportive Leadership Training and Aim of the Study

The underlying conceptual framework for the development and evaluation of the SLT intervention is COR theory (Hobfoll, 1989). The central tenet of COR theory is that individuals try to acquire and foster resources and that the prevention of resource loss is a key motivational principle. While stress occurs when individuals perceive that their resources are lost or threatened with loss, having a surplus of resources leads to the experience of well-being. Resources are defined in terms of objects, personal characteristics, energies, and conditions that help satisfy individuals' goals and needs (Halbesleben et al., 2014). Supportive social conditions lay the foundation for the prevention of resource loss and the promotion of resource gain. By extending an individual's set of available resources, support from others provides numerous benefits for well-being (Hobfoll et al., 1990).

The role of leaders in providing supportive conditions for employees has received extensive attention in several research areas, including the leadership and occupational stress literature. In their conceptualizations of supportive leadership, the different fields converge on the idea that supportive leaders show care and concern for their employees' needs and well-being (e.g., Greene & Schriesheim, 1980; House, 1981; Rafferty & Griffin, 2006; Yukl et al., 2002). Consistent with COR theory's proposition that no single form of support is optimal for resource protection and acquisition (Hobfoll et al., 1990), the current SLT is based on the conception of supportive leader behaviors as including emotional, appraisal, informational, and instrumental forms of support. Supportive leaders show care and concern

for their employees by listening to their employees' problems and expressing understanding, providing encouragement and recognition, giving feedback and task-related information, and actively assisting employees in performing their work (House, 1981). In developing the SLT, this comprehensive approach allowed us to include supportive behaviors that are widely applicable and simple to implement for leaders and that, due to their focus on the general work domain, may benefit a variety of employees.

The aim of this study is to test the effects of the developed SLT on employee well-being. Drawing on the occupational stress literature, previous research has predominantly examined SLT effects on the negative aspects of employee well-being, such as perceived distress and health impairments (e.g., Hammer et al., 2019; Kossek et al., 2019). COR theory, with its emphasis on resource gain, highlights the importance of considering positive well-being outcomes. To gain insights into the effectiveness of SLT on the different components of employee well-being, we examine its effects on employees' social well-being in terms of their perceptions of LMX quality and employee hedonic well-being, including positive affective well-being, emotional exhaustion, and job satisfaction.

Effects of the Supportive Leadership Training on Employee Social Well-Being

Given the fundamentally interpersonal nature of support, we consider employees' perceptions of the quality of their relationship with their leader to be a key outcome of SLT. Supporting this view, COR theory states that much of the value of support lies in its capacity to create close interpersonal relationships (Hobfoll, 2001). According to COR theory, support contributes to the perception of the quality of the relationship by providing a sense of attachment and belonging (Hobfoll et al., 1990).

One theoretical approach that specifically focuses on the quality of the relationship between leaders and employees is LMX (Graen & Uhl-Bien, 1995). LMX theory is built on the concept that leaders form relationships of differing quality with each of their employees. Whereas low-quality LMX relationships are limited to the fulfillment of formal role obligations, high-quality LMX describes positive relationships characterized by mutual trust, respect, and liking. Due to the focus on the quality of the

relationship, we view employees' perceptions of LMX quality as an aspect of employee social well-being, which is defined in terms of having positive relationships with others (e.g., Fisher, 2014; Keyes, 1998).

According to LMX theory, leaders may increase LMX quality by providing their employees with various support resources, such as valuable information, active assistance, and attention (Graen & Scandura, 1987). Consistent with this idea, empirical studies, although mainly cross-sectional, have found that leaders may promote higher-quality LMX by showing empathy (Mahsud et al., 2010), giving fair feedback (Sparr & Sonnentag, 2008), and providing work-related information (Gregersen et al., 2016). While these findings indicate that supportive leadership facilitates the development of high-quality LMX, research rigorously testing this assumption is scarce, and knowledge of how to increase the quality of existing LMX relationships is limited (Erdogan & Bauer, 2015). As one of few existing studies, an early intervention study suggested that leadership training has the potential to improve employees' perceptions of LMX quality (Graen et al., 1982). Based on this encouraging finding and the notion of COR theory that support helps create high-quality relationships, we expect that the developed SLT will have positive effects on employees' social well-being in terms of their perceptions of LMX quality.

Hypothesis 1 (H1): Compared with employees whose leaders are in the control group, employees whose leaders are in the SLT intervention group will report higher levels of LMX quality after the intervention.

Effects of the Supportive Leadership Training on Employee Hedonic Well-Being

In addition to the positive effects of the SLT on employee social well-being in terms of LMX quality, we expect that the SLT is beneficial to employees' hedonic well-being, including their positive affective well-being, emotional exhaustion, and job satisfaction. Hedonic well-being refers to the subjective experience of inner pleasure and happiness (Fisher, 2014). As a reflection of the positive and negative affective components of hedonic well-being, positive affective well-being denotes an individual's feelings of pleasure and activation (Wright, 2014), whereas emotional exhaustion involves

feelings of being depleted of physical and emotional resources (Maslach et al., 2001). Job satisfaction reflects the evaluative aspect of employee hedonic well-being and refers to employees' positive attitudes toward their work (Locke, 1976).

COR theory highlights the important role of support in improving hedonic well-being and derives the benefits of support from its ability to satisfy the individual's need to maintain and acquire resources. By helping individuals prevent resource loss and build resource reserves, support reduces the likelihood of negative affective experiences and promotes positive mental states (Hobfoll et al., 1990). Meta-analytical findings indicate that support from the leader is negatively related to emotional exhaustion (Halbesleben, 2006) and positively related to employees' positive affective states (Halbesleben, 2010) and job satisfaction (Mathieu et al., 2019). Furthermore, intervention studies have offered some support for the effectiveness of SLT in terms of employees' psychological distress (Kossek et al., 2019), health impairments (e.g., Hammer et al., 2019), and job satisfaction (Hammer et al., 2011). Given these findings, we expect that the developed SLT will have beneficial effects on employees' positive affective well-being, emotional exhaustion, and job satisfaction.

Hypothesis 2 (H2): Compared with employees whose leaders are in the control group, employees whose leaders are in the SLT intervention group will report (a) higher levels of positive affective well-being, (b) lower levels of emotional exhaustion and (c) higher levels of job satisfaction after the intervention.

Baseline Workload as a Moderator of Supportive Leadership Training Effectiveness

Both theoretical arguments and empirical evidence have highlighted the critical role of supportive leaders in helping employees deal with excessive workloads (e.g., Goh et al., 2015; House, 1981), indicating that an SLT intervention might specifically address the needs of employees who perceive high levels of workloads. Therefore, we argue that those employees who perceive relatively higher levels of quantitative and qualitative workloads derive more benefits from an SLT intervention in

terms of well-being. High quantitative workloads mean that employees have problems completing their work within the time available because they have too much work to do. High qualitative workloads, in contrast, means that employees have problems completing their work because they find their work to be very difficult (Bowling & Kirkendall, 2012).

COR theory provides support for the expectation that the effectiveness of the SLT intervention varies according to employees' perceived workloads. The resource gain paradox principle states that the impact of resource gain becomes stronger under stressful experiences because of the individual's need to maintain resource reserves to offset resource loss (Halbesleben et al., 2014). Through the lens of COR theory, experiences of excessive workload are stressful because they threaten one's internal resources (e.g., energies) with loss and prevent one from acquiring additional resources (Bowling et al., 2015).

In the context of COR theory, employees with higher levels of perceived workloads should be more likely to benefit from an SLT in terms of LMX quality because employees' perceptions of a heavy workload indicate their need for support to prevent resource loss, and the SLT intervention should contribute to the leader's fulfillment of this need. Considering that the fulfillment of needs is an important basis for relationship functioning (Patrick et al., 2007), the SLT might have particularly strong effects on LMX quality for employees who perceive a heavy workloads. Indeed, LMX scholars suggest that employees' perception that their leader meets their critical needs is an important component of high-quality LMX relationships (Liden et al., 1997). Therefore, we hypothesize the following:

Hypotheses 3 (H3) and 4 (H4): The effects of the SLT will be moderated by employees' baseline perceptions of quantitative workloads (H3) and qualitative workloads (H4), such that the beneficial intervention effect on LMX quality will be stronger for employees with higher workloads. In particular, employees with higher workloads whose leaders are in the intervention group will report higher levels of LMX quality than employees with higher workloads whose leaders are in the control group. This difference will be less pronounced for employees with lower levels of workloads.

In addition, we expect that the positive effects of the SLT on hedonic well-being are particularly evident among employees who perceive higher levels of workloads. Again, the COR argument for this proposition is that employees with higher perceived workloads experience greater resource loss (Bowling et al., 2015). The SLT intervention should help minimize the loss of internal resources and facilitate resource gain, and the state of resources influences the levels of positive affective well-being, emotional exhaustion, and job satisfaction (Halbesleben et al., 2014). Several studies provide evidence that the beneficial effects of support from the leader on hedonic well-being are particularly evident for employees experiencing high workloads (e.g., Beehr et al., 2003; Pluut et al., 2018). Therefore, we propose that employees who perceive higher levels of quantitative and qualitative workloads benefit more from the SLT in terms of positive affective well-being, emotional exhaustion, and job satisfaction.

Hypotheses 5 (H5) and 6 (H6): The effects of the SLT will be moderated by employees' perceptions of quantitative workloads (H5) and qualitative workloads (H6), such that the beneficial intervention effects on (a) positive affective well-being, (b) emotional exhaustion, and (c) job satisfaction will be stronger for employees with higher workloads. In particular, employees with higher workloads whose leaders are in the intervention group will report higher levels of positive affective well-being and job satisfaction and lower levels of emotional exhaustion than employees with higher workloads whose leaders are in the control group. These differences will be less pronounced for employees with lower levels of workloads.

Methods

Research Design

This study was based on a cluster RCT funded by [organization]. Ethical approval was received from the institutional review board of [institution]. The cluster RCT was conducted with childcare centers operated by a nonprofit organization in Germany from 10/2017 to 10/2018. The training participants were the directors of the childcare centers. We randomly selected 80 childcare directors

who were randomized into an intervention group (*n* = 41) and a waitlist control group (*n* = 39). To evaluate the effectiveness of the SLT, we used survey data from the employees in the childcare centers. Data were collected one month prior to training, one month after the completion of training, and six months after the completion of training. Figure 2 shows an overview of the research design.

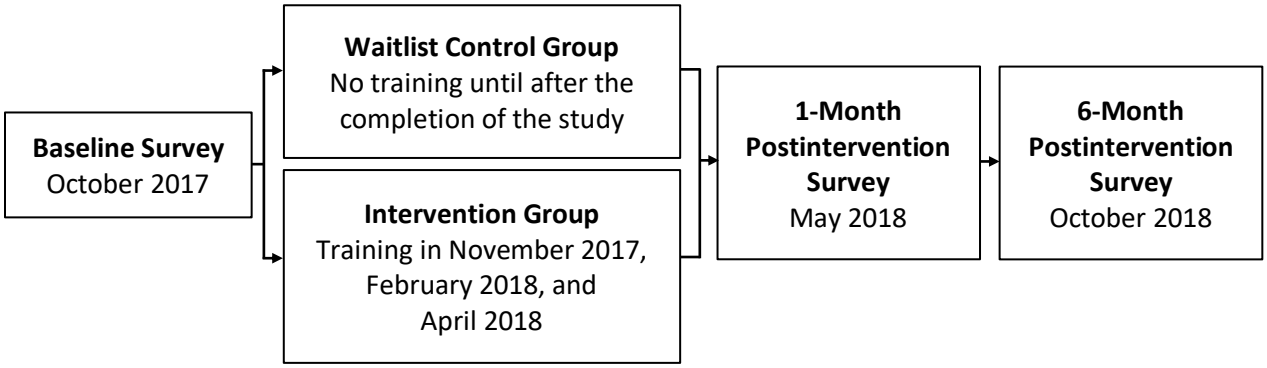

Figure 2. Overview of the Research Design and Data Collection

Intervention Content and Delivery

In developing the SLT, we followed recommendations to use multiple delivery methods (e.g., professional input and group discussions) while focusing on practice (Lacerenza et al., 2017). The first training module focused on self-reflection and the advantages of supportive leadership. The leaders were instructed to reflect on their work situation and their leadership role. In addition, they were given a presentation on the importance of being supportive of their employees, and they discussed what they needed to effectively fulfill their leadership role. The second module focused on the leaders' role in creating supportive work environments and specific strategies for how to perform this role. The aim of this session was to provide the leaders with the knowledge and skills to engage in supportive behaviors (e.g., providing information and expressing appreciation). The third module focused on illustrating and practicing strategies for finetuning supportive leader behavior. The leaders were sensitized to the fact

that their employees had individual needs, and they were coached through the process of developing strategies for offering support that is tailored to employees' individual needs. Role-playing was used to practice active listening skills and the provision of constructive feedback. Drawing on research showing that goal-setting improves training outcomes (Burke & Hutchins, 2007), the leaders received notebooks to set specific and challenging yet attainable goals for themselves and plan concrete steps to implement the training content in their work. Supplemental Table 1 shows more details on the training content.

The three training modules were delivered in three 8-hour sessions by a consultant with expertise in leadership training. The training was conducted off the job at the organization's headquarters. To ensure that the group sizes were manageable, we formed three training groups. The time intervals between the training sessions were 10 to 12 weeks to enable the leaders to apply the training content to their work. To align the intervention process with organizational practices, we implemented a steering group that included internal stakeholders (e.g., human resources managers).

Participants in the Surveys

To be included in the analysis, employees had to participate in the baseline survey and provide the individual codes that allowed us to match the surveys. Figure 3 shows the CONSORT flowchart. At baseline, 713 employees were invited to participate in the survey, and responses were returned by 505 employees (70.8%), of whom 496 (98.2%) met the inclusion criteria. Of the eligible employees, 266 participated in the one-month survey (53.6%), and 226 participated in the six-month survey (45.6%).

The baseline sample included 240 employees from 40 childcare centers whose directors were in the intervention group and 256 employees from 37 childcare centers whose directors were in the control group. The number of eligible employees in the childcare centers ranged from 1 to 13 (M = 7.32, SD = 2.33). Table 1 shows the sociodemographic characteristics of the directors and their employees. The majority of the employees were female (97.8%) and worked full time (57.0%). The mean age was 45.63 years (SD = 11.32), and the mean professional experience was 18.12 years (SD = 11.57). Most of

the employees were childcare teachers (61.5%), 23.4% were assistant teachers, 9.9% were kitchen staff, and 5.2% were other employees (e.g., janitors and gardeners). Furthermore, a total of 24.7% of the employees were group coordinators and/or deputy directors.

Measures

Employee Well-Being Outcomes

Social Well-Being. We assessed LMX quality using the seven-item LMX-7 scale (Graen & Uhl-Bien, 1995; Schyns, 2002). Sample items included "How would you characterize your working relationship with your leader?" and "How well does your leader understand your job problems and needs?" The responses were scored on a 5-point scale with different labels (e.g., for the sample items, 1 = *extremely ineffective* to 5 = *extremely effective* and 1 = *not at all* to 5 = *a great deal*).

Hedonic Well-Being. Positive affective well-being was measured with the five-item WHO-5 well-being index (Bech, 2004). A sample item was "In the last two weeks, I have felt active and vigorous." The responses were scored on a 5-point scale (1 = *never* to 5 = *all the time*). Five items from the Maslach Burnout Inventory (MBI; Büssing & Perrar, 1992; Maslach & Jackson, 1981) were used to assess emotional exhaustion. A sample item was "I feel burned out from my work." The responses were scored on a 6-point scale (1 = *never* to 6 = *often*). We measured job satisfaction with six items from the Copenhagen Psychosocial Questionnaire (COPSOQ; Kristensen et al., 2005; Nübling et al., 2006). A sample item was "Regarding your work in general, how pleased are you with your work prospects?" The responses were scored on a 5-point scale (1 = *very unsatisfied* to 5 = *very satisfied*).

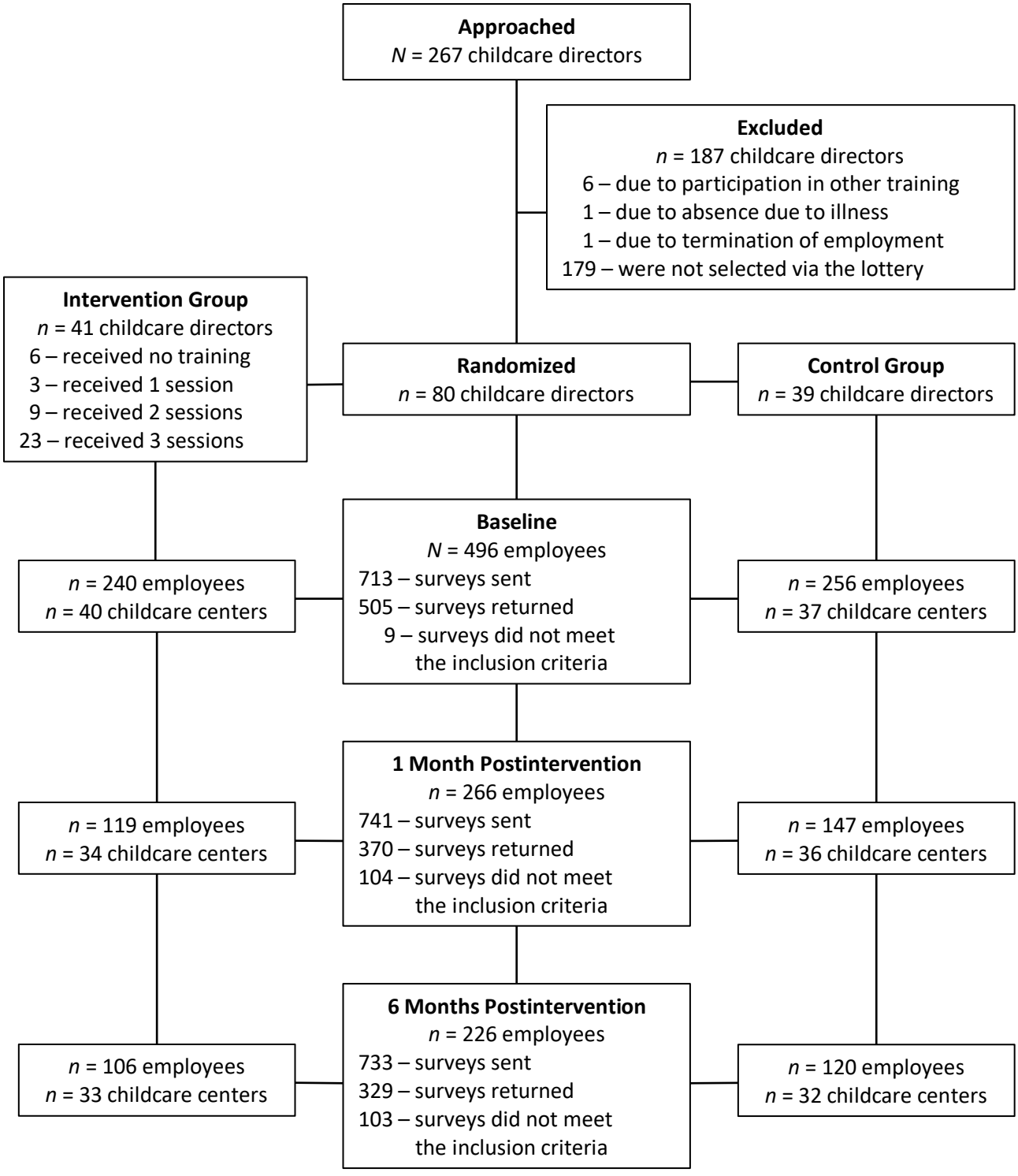

Figure 3. *CONSORT Flowchart of the Study*

Table 1. Leader and Employee Sociodemographic Characteristics by Condition at Baseline

Variable	Intervention group *M* (*SD*)/%	Control group *M* (*SD*)/%
Leaders		
Age	49.66 (7.73)	51.75 (7.97)
Female	94.7%	100%
Years of working as a childcare director	10.83 (11.63)	15.83 (10.25)
Number of employees	8.73 (2.56)	10.32 (2.97)
Hours spent on leadership activities per week	4.86 (3.09)	5.59 (4.54)
Employees[a]		
Age	45.11 (11.85)	46.13 (10.79)
Female	97.1%	98.4%
Full-time employment	49.0%	50.0%
Years of professional experience	18.98 (11.41)	19.28 (11.28)
Occupation		
Childcare teacher	60.0%	62.9%
Assistant teacher	24.2%	22.7%
Kitchen staff	9.6%	10.2%
Other	6.2%	4.3%
Group leader/deputy directory	24.9%	24.5%
Secondary employment	9.3%	9.4%
Years of working under childcare director		
less than 1 year	24.4%	19.6%
1 to 5 years	40.2%	39.2%
6 to 10 years	15.8%	23.2%
more than 10 years	19.7%	18.0%

Note. Leaders: *n* = 36–38 in the intervention group. *n* = 32–36 in the control group. Employees: *n* = 234–240 whose leaders were in the intervention group. *n* = 244–256 whose leaders were in the control group. [a] Please note that the participants in the training were the leaders and that we used data from employees to evaluate the effectiveness of the SLT.

Baseline Moderators

We assessed quantitative workloads with three items from the COPSOQ (Kristensen et al., 2005; Nübling et al., 2006). A sample item was "How often do you not have time to complete all of your work tasks?" Qualitative workloads were measured with three items developed by Rimann and Udris (1997). A sample item was "The work is too difficult for me." The responses were scored on a 5-point scale (1 = *never* to 5 = *often*).

Statistical Analyses

Analyses were conducted using an ITT approach. That is, we included all employees whose leaders were assigned to the intervention group in the analyses regardless of whether their leaders completed the training. This approach gives an estimate of the intervention effects under realistic conditions where noncompliance and withdrawal are inevitable. In addition, ITT analysis maintains the benefits of randomization and avoids sample bias and reductions in statistical power (Gupta, 2011).[1]

To test the effects of the SLT, we used linear mixed-effects models with a random intercept for the childcare centers using the lme4 package (Bates et al., 2015) in R version 4.0.3 (R Core Team, 2019). Consistent with the recommendations of Bodner and Bliese (2018), we computed separate models for the 1-month and 6-month outcomes and used an analysis of covariance (ANCOVA) approach, in which we controlled for the baseline values of the outcome variables. While this approach does not allow for the examination of change relative to baseline, it maximizes the statistical power to detect (moderated) intervention effects. All continuous independent variables in the models were centered at their grand means. To aid in the interpretation of the moderated intervention effects, we used simple slope tests and tested the intervention effects at low (–1 *SD*), mean, and high (+1 *SD*) baseline workload values.

[1] To provide estimates of the SLT effects under optimal conditions, we conducted a supplementary per-protocol analysis in which we removed all employees whose leaders (1) were in the intervention group and received ≤ 1 training session or (2) left the childcare center before completion of the study (see Supplemental Tables 3–6 for the results).

Process Evaluation

To better understand the effects of the SLT, we evaluated the intervention process using several sources of information, including administrative records of participant attendance at the training, protocols from the steering group meetings, and systematic observations of the training sessions. For a detailed description of the process evaluation, see Supplemental Material 1.

Results

Tables 2 and 3 show the means, standard deviations, and correlations of the study variables for the intervention and control groups. For the results of the attrition analysis, see Supplemental Table 2.

Table 2. Means, Standard Deviations, and Correlations of the Study Variables by Condition at Baseline

	M	*SD*	α	1	2	3	4	5	6
1. LMX quality	3.62	0.83	0.92		.28***	–.32	.53***	–.26***	–.18**
2. Positive affective well-being	3.31	0.84	0.91	0.37***		–.67***	.58***	–.39***	–.32***
3. Emotional exhaustion	3.51	1.27	0.93	–0.32***	–.66***		–.60***	.54***	.44***
4. Job satisfaction	3.67	0.69	0.85	0.56***	.62***	–.61***		–.41***	–.35***
5. Quantitative workload	2.74	0.90	0.84	–.39***	–.55***	.63***	–.62***		.51***
6. Qualitative workload	1.84	0.72	0.77	–.29***	–.37***	.48***	–.42***	.47***	

Note. *N* = 482–495 employees at baseline. The correlations for the employees whose leaders were in the intervention group (*n* = 230–240) are shown above the diagonal, and the correlations for the employees whose leaders were in the control group (*n* = 246–254) are shown below the diagonal. In computing the correlations, we did not account for the nested data structure.
** $p < .01$ *** $p < .001$

Table 3. Means and Standard Deviations of the Outcome Variables by Condition

	Intervention			Control		
Variable	Baseline *n* = 234–240 *M* (*SD*)	1 month *n* = 114–119 *M* (*SD*)	6 months *n* = 105–106 *M* (*SD*)	Baseline *n* = 248–255 *M* (*SD*)	1 month *n* = 145–146 *M* (*SD*)	6 months *n* = 118–120 *M* (*SD*)
LMX quality	3.73 (0.82)	3.87 (0.79)	3.81 (0.74)	3.52 (0.84)	3.48 (0.82)	3.54 (0.82)
Positive affective well-being	3.42 (0.84)	3.44 (0.83)	3.30 (0.80)	3.22 (0.84)	3.30 (0.88)	3.29 (0.86)
Emotional exhaustion	3.48 (1.25)	3.45 (1.22)	3.65 (1.20)	3.55 (1.30)	3.65 (1.35)	3.70 (1.35)
Job satisfaction	3.71 (0.66)	3.79 (0.62)	3.81 (0.61)	3.64 (0.72)	3.60 (0.75)	3.59 (0.79)
Quantitative workload[a]	2.63 (0.89)	2.58 (0.91)	2.76 (0.86)	2.84 (0.90)	2.90 (0.89)	2.94 (0.97)
Qualitative workload[a]	1.78 (0.69)	1.93 (0.74)	1.96 (0.75)	1.91 (0.74)	2.02 (0.80)	2.00 (0.81)

Note. [a] To test the possibility that the SLT had effects on employees' perceptions of workloads, we conducted a supplementary analysis in which we used postintervention quantitative and qualitative workloads as outcomes.[2]

[2] The results of the supplementary analysis showed no intervention effects on quantitative workload at one month postintervention ($b = –0.16$, $SE = 0.09$, $p = .090$) and six months postintervention ($b = –0.03$, $SE = 0.10$, $p = .78$) or on qualitative workload at one month postintervention ($b = –0.003$, $SE = 0.07$, $p = .97$) and six months postintervention ($b = 0.01$, $SE = 0.09$, $p = .87$).

Table 4. Results of the Mixed-Effects Models for Predicting LMX Quality at One Month and Six Months Postintervention

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.58***	[3.48, 3.69]	3.60***	[3.49, 3.70]	3.61***	[3.49, 3.74]	3.62***	[3.50, 3.74]
Baseline LMX quality	0.74***	[0.66, 0.82]	0.71***	[0.63, 0.80]	0.66***	[0.57, 0.75]	0.64***	[0.55, 0.74]
Condition[a]	0.17*	[0.01, 0.33]	0.16*	[0.01, 0.31]	0.09	[–0.08, 0.27]	0.09	[–0.08, 0.27]
Baseline quant. workload			–0.10	[–0.21, 0.01]			–0.05	[–0.17, 0.07]
Baseline qual. workload			–0.02	[–0.15, 0.11]			0.02	[–0.13 0.17]
Condition × quant. workload			0.18*	[0.02, 0.34]			0.10	[–0.07, 0.28]
Condition × qual. workload			–0.12	[–0.33, 0.10]			–0.14	[–0.37, 0.09]
Random Effects								
Residual variance	0.25		0.24		0.26		0.26	
Intercept variance	0.03		0.03		0.04		0.04	

Note. *N* = 253 employees nested in 70 childcare centers at one month postintervention. *N* = 221 employees nested in 65 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*p < .05 **p < .01 ***p < .001

Table 5. Results of the Mixed-Effects Models for Predicting Positive Affective Well-Being at One Month and Six Months Postintervention

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.35***	[3.24, 3.46]	3.36***	[3.25, 3.47]	3.36***	[3.24, 3.47]	3.36***	[3.25, 3.47]
Baseline positive affective well-being	0.62***	[0.52, 0.72]	0.57***	[0.46, 0.69]	0.66***	[0.56, 0.76]	0.56***	[0.44, 0.69]
Condition[a]	0.03	[–0.13, 0.20]	0.03	[–0.13, 0.19]	–0.15	[–0.32, 0.01]	–0.15	[–0.31, 0.02]
Baseline quant. workload			–0.01	[–0.14, 0.17]			–0.14	[–0.29, 0.01]
Baseline qual. workload			–0.20*	[–0.37, –0.03]			–0.07	[–0.25, 0.11]
Condition × quant. workload			0.02	[–0.19, 0.22]			0.19	[–0.02, 0.40]
Condition × qual. workload			0.10	[–0.17, 0.36]			–0.15	[–0.41, 0.12]
Random Effects								
Residual variance	0.46		0.45		0.40		0.38	
Intercept variance	0.00		0.00		0.00		0.00	

Note. *N* = 264 employees nested in 70 childcare centers at one month postintervention. *N* = 224 employees nested in 65 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*$p < .05$ ***$p < .001$

Table 6. Results of the Mixed-Effects Models for Predicting Emotional Exhaustion at One Month and Six Months Postintervention

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.60***	[3.48, 3.73]	3.59***	[3.46, 3.72]	3.64***	[3.49, 3.78]	3.63***	[3.48, 3.78]
Baseline emotional exhaustion	0.83***	[0.76, 0.90]	0.79***	[0.70, 0.88]	0.76***	[0.68, 0.84]	0.75***	[0.64, 0.86]
Condition[a]	–0.08	[–0.27, 0.11]	–0.08	[–0.28, 0.10]	0.11	[–0.11, 0.33]	0.09	[–0.13, 0.31]
Baseline quant. workload			0.13	[–0.03, 0.30]			0.09	[–0.10, 0.28]
Baseline qual. workload			0.04	[–0.15, 0.22]			0.05	[–0.17, 0.28]
Condition × quant. workload			–0.31**	[–0.54, –0.09]			–0.34*	[–0.61, –0.08]
Condition × qual. workload			0.18	[–0.11, 0.47]			0.09	[–0.25, 0.43]
Random Effects								
Residual variance	0.52		0.49		0.62		0.59	
Intercept variance	0.01		0.02		0.01		0.01	

Note. *N* = 261 employees nested in 70 childcare centers at one month postintervention. *N* = 221 employees nested in 65 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*p < .05 **p < .01 ***p < .001

Table 7. Results of the Mixed-Effects Models for Predicting Job Satisfaction at One Month and Six Months Postintervention

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.65***	[3.56, 3.74]	3.66***	[3.57, 3.75]	3.63***	[3.53 3.73]	3.64***	[3.54, 3.74]
Baseline job satisfaction	0.75***	[0.67 0.83]	0.68***	[0.58, 0.78]	0.75***	[0.67, 0.84]	0.70***	[0.59, 0.81]
Condition[a]	0.08	[–0.05, 0.22]	0.08	[–0.05, 0.21]	0.12	[–0.03, 0.26]	0.11	[–0.03, 0.26]
Baseline quant. workload			–0.10*	[–0.21, 0.001]			–0.11	[–0.22, 0.005]
Baseline qual. workload			–0.04	[–0.15, 0.07]			0.01	[–0.11, 0.14]
Condition × quant. workload			0.11	[–0.03, 0.25]			0.11	[–0.05, 0.26]
Condition × qual. workload			0.00	[–0.18, 0.18]			–0.01	[–0.21, 0.18]
Random Effects								
Residual variance	0.19		0.18		0.19		0.19	
Intercept variance	0.02		0.02		0.03		0.03	

Note. *N* = 260 employees nested in 70 childcare centers at one month postintervention. *N* = 223 employees nested in 65 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*p < .05 ***p < .001

Effects of the Supportive Leadership Training on Employee Well-Being

Table 4 displays the results of the models regarding the SLT effects on employee social well-being in terms of LMX quality. The intervention effects model showed a significant effect of the SLT on one-month LMX quality (b = 0.17, SE = 0.08, p = .039). At six months postintervention, the intervention effect was not significant (b = 0.09, SE = 0.09, p = .29). Thus, the results provide partial support for H1. Tables 5–7 show the results of the models regarding the intervention effects on employee hedonic well-being. No significant effects of the SLT were found for hedonic well-being. Thus, H2(a)–(c) were not supported.

Moderated Effects of the Supportive Leadership Training on Employee Well-Being

The moderated intervention effects model showed that baseline quantitative workload moderated the intervention effect on one-month LMX quality (b = 0.18, SE = 0.08, p = .024). Descriptively, the moderating effect indicated that the SLT was more effective for the employees with higher quantitative workloads (see Figure 4). The simple slope tests showed that the intervention effect was not significant at low levels of quantitative workloads (b = –0.01, SE = 0.11, p = .92), but it was significant and positive at the mean (b = 0.16, SE = 0.08, p = .040) and high (b = 0.33, SE = 0.11, p = .003) levels of quantitative workloads. However, quantitative workload did not moderate the intervention effect on six-month LMX quality (b = 0.10, SE = 0.09, p = .25). Thus, the results provide partial support for H3. Furthermore, we found no moderating effects of qualitative workload on the intervention effect on one-month LMX quality (b = –0.12, SE = 0.11, p = .29) or six-month LMX quality (b = –0.14, SE = 0.11, p = .23). Thus, H4 was not supported.

Regarding positive affective well-being, we did not find a moderating effect of baseline quantitative workload on the intervention effect at one month postintervention (b = 0.02, SE = 0.11, p = .88) or six months postintervention (b = 0.19, SE = 0.11, p = .071). In addition, qualitative workload was not a moderator of the intervention effects on positive affective well-being at one month

postintervention (*b* = 0.10, *SE* = 0.14, *p* = .48) or six months postintervention (*b* = –0.15, *SE* = 0.13, *p* = .28). Thus, H5(a) and H6(a) were not supported.

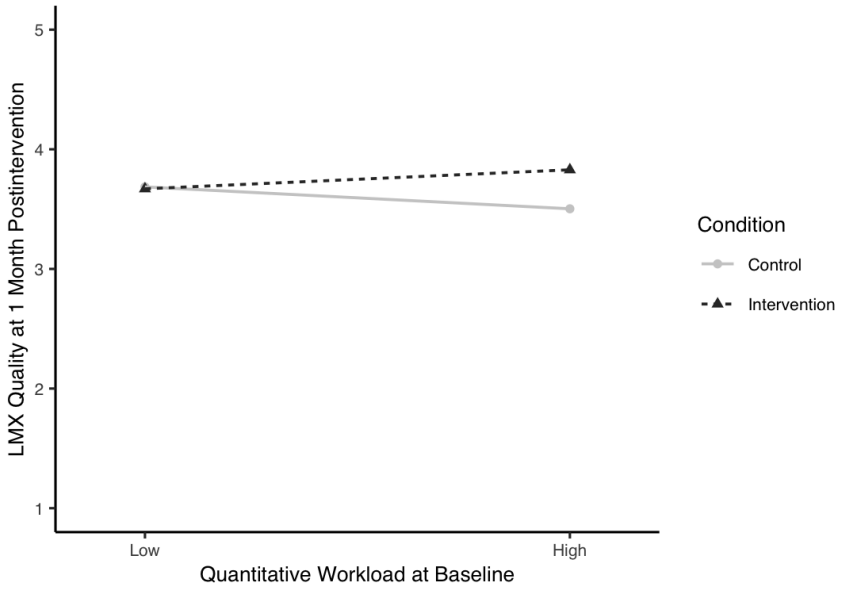

Figure 4. Moderated Intervention Effect on LMX Quality at One Month Postintervention

However, the results showed that baseline quantitative workload moderated the intervention effect on one-month emotional exhaustion (*b* = –0.31, *SE* = 0.11, *p* = .006). Descriptively, this moderating effect indicated that employees with higher quantitative workloads benefited more from the SLT in terms of emotional exhaustion (see Figure 5). The simple slope tests showed that the intervention effect was significant and negative at high levels of quantitative workloads (*b* = –0.38, *SE* = 0.14, *p* = .009) but not significant at the mean (*b* = –0.08, *SE* = 0.09, *p* = .38) and low (*b* = 0.21, *SE* = 0.14, *p* = .14) levels of quantitative workloads. Furthermore, we found that baseline quantitative workload moderated the intervention effect on six-month emotional exhaustion (*b* = –0.34, *SE* = 0.13, *p* = .012). Descriptively, this moderating effect indicated that the SLT was more beneficial for employees with higher quantitative workloads and less beneficial for employees with lower levels of quantitative workloads (see Figure 6). The simple slope tests showed that the intervention effect was significant and positive at low levels of quantitative workloads (*b* = 0.41, *SE* = 0.17, *p* = .014) but not significant at the

mean (*b* = 0.09, *SE* = 0.11, *p* = .40), and high (*b* = –0.23, *SE* = 0.17, *p* = .18) levels of quantitative workloads.[3] Thus, the results provide partial support for H5(b). Qualitative workload did not moderate the intervention effects on one-month emotional exhaustion (*b* = 0.18, *SE* = 0.15, *p* = .21) or six-month emotional exhaustion (*b* = 0.09, *SE* = 0.17, *p* = .59). Thus, H6(b) was not supported.

Baseline quantitative workload did not moderate the intervention effects on one-month job satisfaction (*b* = 0.11, *SE* = 0.07, *p* = .12) or six-month job satisfaction (*b* = 0.11, *SE* = 0.08, *p* = .18). Finally, qualitative workload was not a significant moderator of the intervention effects on job satisfaction at one month postintervention (*b* = 0.00, *SE* = 0.09, *p* = .99) or six months postintervention (*b* = –0.01, *SE* = 0.10, *p* = .91). Thus, we found no support for H5(c) and H6(c).

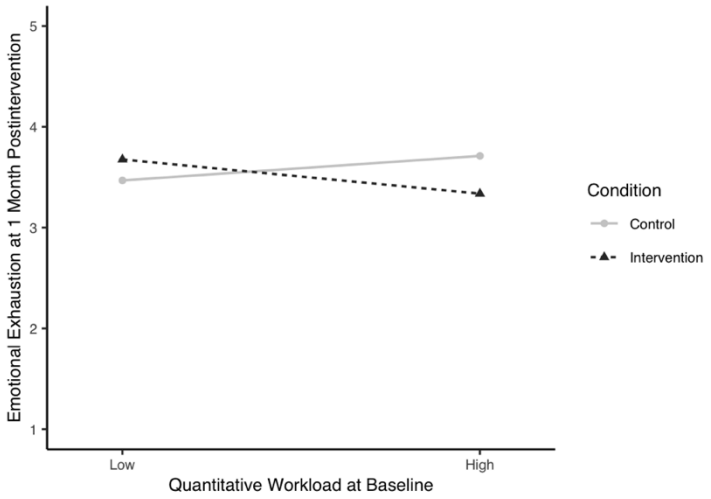

Figure 5. Moderated Intervention Effect on Emotional Exhaustion at One Month Postintervention.

[3] Note that quantitative workload was a continuous variable and that we tested simple effects at the mean and at 1 *SD* above and below the mean for illustrative purposes. Although the simple effect at high levels of quantitative workloads was not significantly different from zero, the significant interaction effect indicates that the intervention was more beneficial for those with higher (vs. lower) levels of quantitative workloads.

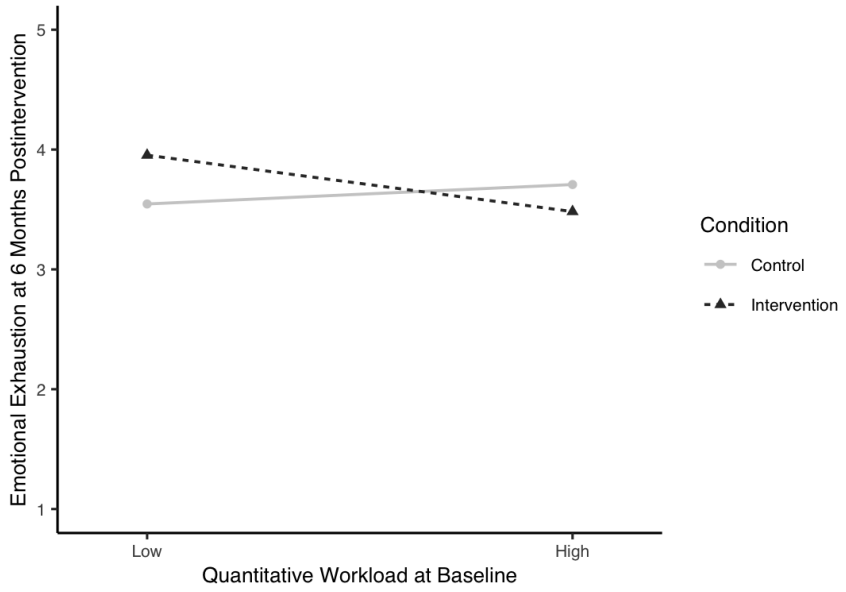

Figure 6. Moderated Intervention Effect on Emotional Exhaustion at Six Months Postintervention.

Discussion

Drawing on COR theory (Hobfoll, 1989), this study sought to develop and evaluate an SLT designed to teach leaders ways to be supportive of their employees. We examined the effects of the SLT on employees' social well-being in terms of LMX quality and employee hedonic well-being, including their positive affective well-being, emotional exhaustion, and job satisfaction. The results showed that the SLT was effective in terms of LMX quality at one month postintervention. This intervention effect was moderated by employees' baseline perceptions of quantitative workloads, such that the employees with higher quantitative workloads benefited more from the SLT. While we found no evidence for the general effectiveness of the SLT in terms of hedonic well-being, baseline quantitative workload moderated the effects of the SLT on emotional exhaustion, suggesting that the intervention was more effective for employees with higher quantitative workloads and less beneficial for those with lower quantitative workloads. Baseline qualitative workload was not a moderator of SLT effectiveness.

Theoretical Implications

By providing an RCT that rigorously examined the effects of a theoretically and empirically informed SLT on employee well-being, this study has important implications for the SLT literature. First, we contribute to SLT research by illustrating that using COR theory to develop and evaluate an SLT provides a novel perspective on SLT frameworks that shifts the focus from the prevention of negative states to the promotion of the positive dimensions of employee well-being through SLT. The current study extends the well-being outcomes of SLT by demonstrating positive SLT effects on employees' social well-being in terms of LMX quality. Furthermore, we highlight the value of COR theory in clarifying for whom SLT is effective. Given the small overall effects of SLT on employee well-being (e.g., Hammer et al., 2019), identifying employee-level factors that may facilitate SLT effectiveness is critical. By showing that SLT is more effective for employees experiencing higher quantitative workloads, we draw attention to the important role of employees' stressful working conditions in influencing SLT effectiveness and add to the emerging but scarce research that has examined the employee-level moderators of SLT effects on employee well-being (e.g., Hammer et al., 2011; Kossek et al., 2019).

Insights from relationship theory (e.g., Colbert et al., 2016) offer potential explanations for the lack of effects of the SLT on positive affective well-being and job satisfaction and the observation of a possible detrimental SLT effect on emotional exhaustion among employees who perceived lower levels of baseline quantitative workloads. Relationship scholars have emphasized that, to promote positive states and provide opportunities to thrive in the absence of stressful experiences, it is necessary to move beyond traditional forms of support to include supportive behaviors that satisfy needs for growth and development (Feeney & Collins, 2015). The supportive behaviors included in the training (e.g., giving task assistance and expressing understanding) might primarily target the needs of employees in the context of stressful experiences but might not effectively satisfy the needs for growth and development. Supporting this view, empirical evidence indicates that support may have neutral or even detrimental

effects on well-being when it does not address the needs of the recipient (Beehr et al., 2010). Recognizing the importance of support for growth and development may advance the COR-based development of SLT and strengthen the effects of SLT in terms of promoting positive well-being.

The moderating effects of quantitative but not qualitative workloads on SLT effectiveness might indicate the potential limits of SLT. The developed SLT focuses on supportive behaviors that are widely applicable for leaders and is not designed to teach leaders to detect the various work-related problems of their employees and provide support that specifically addresses these problems. Research suggests that an excessive qualitative workload is more damaging than a heavy quantitative workload (Shaw & Weekley, 1985). The generally supportive behaviors included in the training might be useful for leaders in assisting employees dealing with quantitative overload as the less adverse form of workload but may not be strong enough to benefit qualitatively overloaded employees. Effectively assisting employees dealing with high qualitative workloads likely requires more extensive and specific support (e.g., assistance in the development of skills; Bowling & Kirkendall, 2012), which is beyond the scope of SLT.

Finally, this study has important implications for the LMX literature. While most work has focused on the characteristics of employees, leaders, and their relationships as antecedents of LMX quality (Dulebohn et al., 2012), little is known about deliberate efforts to influence LMX quality (Erdogan & Bauer, 2015). In this study, we moved beyond the primarily descriptive and correlational research on the antecedents of LMX quality by using a field trial. By performing one of the few studies examining LMX quality as an outcome of leadership training (Graen et al., 1982), we expand the understanding of how to improve the quality of existing LMX relationships. Additionally, the observation of an SLT effect on LMX quality reinforces the argument of LMX theory that support from the leader may drive the development of high-quality LMX (Graen & Scandura, 1987).

Another important point concerns the theoretical understanding of LMX. By viewing LMX quality as part of employee social well-being, we shift the focus from investigating the implications of LMX

quality for employee well-being (e.g., Inceoglu et al., 2018) to understanding LMX quality as an outcome that is valuable in and of itself. In addition to offering opportunities for theoretical development in the area of LMX formation, focusing on the examination of LMX quality as an outcome may also improve LMX research on the empirical front by avoiding the endogeneity issues that are associated with the LMX construct (Antonakis et al., 2014).

Limitations and Directions for Future Research

There are several limitations that should be considered. First, we cannot conclusively isolate the factors responsible for the study's inconsistent findings. Insights from the process evaluation indicate that implementation issues may have hindered positive intervention effects[4]. It may have been difficult to detect intervention effects because only slightly more than half of the leaders in the intervention group participated in all three training sessions, and several leaders left the organization during the study. In addition, the organization underwent a restructuring process after the one-month survey. The restructuring was reported to have resulted in stress among the directors, which potentially interfered with the training effects. A refresher training session might have helped strengthen the training effects.

Another potential explanation for the small effects concerns the design of the SLT. Although research indicates that time-spaced leadership training leads to improved outcomes (Lacerenza et al., 2017), the time intervals of 10 to 12 weeks between the training sessions might have been too long, hindering the participants' ability to recall and build on the content of the previous sessions. Additional research is needed to clarify how SLT should be designed to produce maximum effects.

Although the process evaluation provided some evidence that the leaders applied the training content to their work, the study was not designed to examine why SLT influences employee well-being. The SLT targeted multiple forms of supportive leader behavior, indicating that the intervention effects were disseminated through various mechanisms. The examination of the mechanisms underlying SLT

[4] For the results of the process evaluation, see Supplemental Material 1.

effects on employee well-being is not straightforward because the effects occur on different levels, with each offering specific challenges. At the leader level, estimates of SLT effects might not reflect actual changes because self-ratings of leadership are prone to self-perception biases (Fleenor et al., 2010). At the employee level, improvements due to SLT do not necessarily need to be perceived to exert positive effects on well-being (Bolger et al., 2000). Despite these difficulties, the underlying mechanisms should receive greater attention in future research. The use of a realist evaluation framework that combines quantitative data with in-depth interviews and observations (for an excellent example, see Abildgaard et al., 2020) may help uncover why SLT is beneficial to employee well-being.

This approach may also shed light on the processes by which SLT is more effective for employees who perceive higher quantitative workloads. Based on the resource gain paradox principle of COR theory, we theorized that SLT would be particularly beneficial to employees experiencing heavy workloads because supportive leadership is more salient for them. Another possible explanation is that the supportive leader behaviors included in the training (e.g., actively assisting employees) are particularly applicable for leaders when their employees are struggling with heavy quantitative workloads. Therefore, the impact of the intervention might be stronger for quantitatively overloaded employees because the leaders are more likely to apply the training content to them.

In this study, we used a waitlist control group, which allowed us to account for the confounding effects of changes due to time (e.g., organizational transitions) and simply participating in the study. Future studies should use a waitlist control group in combination with an active control group that receives comparable training to draw stronger conclusions regarding SLT effectiveness.

Finally, the sample was mostly female, and several childcare teachers reported that they were group coordinators or deputy directors, which may limit the generalizability of the findings. Although we believe that the general knowledge and strategies that the leaders receive in the SLT will benefit a broad

range of employees, future research should test the effects of the current SLT in other occupational groups and organizational settings.

Practical Implications

This study offers organizations guidance on how to benefit employee well-being via SLT. Through training at the leader level, SLT provides a cost-effective way to improve the well-being of a large number of employees. The finding that SLT is particularly effective for employees with heavy quantitative workloads may help practitioners make optimal decisions regarding the implementation of SLT. Specifically, the assessment of quantitative workloads can be easily included in a needs analysis, which is vital to ensuring that an intervention addresses the needs of the target group (Bell et al., 2017).

Furthermore, the study offers guidelines on how to develop high-quality LMX. In contrast to other leadership models (e.g., transformational leadership), LMX theory does not specify desirable leadership behaviors but focuses on the quality of the relationship between leaders and employees, making it difficult to provide clear prescriptions for improving LMX quality. By suggesting that organizations may facilitate the formation of high-quality LMX via SLT, this study helps bridge the theory–practice gap of LMX theory (Erdogan & Bauer, 2015).

References

Abildgaard, J. S., Nielsen, K., Wåhlin-Jacobsen, C. D., Maltesen, T., Christensen, K. B., & Holtermann, A. (2020). 'Same, but different': A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention. *Human Relations*, *73*(10), 1339–1365. https://doi.org/10.1177/0018726719866896

American Psychological Association. (2018). *Work and Well-Being Survey*. American Psychological Association Center for Organizational Excellence. https://www.apaexcellence.org/assets/general/2018-work-and-wellbeing-survey-results.pdf

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.

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Bech, P. (2004). Measuring the dimension of psychological general well-being by the WHO-5. *Quality of Life Newsletter*, *32*, 15–16.

Beehr, T. A., Bowling, N. A., & Bennett, M. M. (2010). Occupational stress and failures of social support: When helping hurts. *Journal of Occupational Health Psychology*, *15*(1), 45–59. https://doi.org/10.1037/a0018234

Beehr, T. A., Farmer, S. J., Glazer, S., Gudanowski, D. M., & Nair, V. N. (2003). The enigma of social support and occupational stress: Source congruence and gender role effects. *Journal of Occupational Health Psychology*, *8*(3), 220–231. https://doi.org/10.1037/1076-8998.8.3.220

Bell, B. S., Tannenbaum, S. I., Ford, J. K., Noe, R. A., & Kraiger, K. (2017). 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology*, *102*(3), 305–323. https://doi.org/10.1037/apl0000142

Biggs, A., Brough, P., & Barbour, J. P. (2014). Enhancing work-related attitudes and work engagement: A quasi-experimental study of the impact of an organizational intervention. *International Journal of Stress Management*, *21*(1), 43–68. https://doi.org/10.1037/a0034508

Bodner, T. E., & Bliese, P. D. (2018). Detecting and differentiating the direction of change and intervention effects in randomized trials. *Journal of Applied Psychology*, *103*(1), 37–53. https://doi.org/10.1037/apl0000251

Bolger, N., Zuckerman, A., & Kessler, R. C. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology*, *79*(6), 953–961. https://doi.org/10.1037/0022-3514.79.6.953

Bowling, N. A., Alarcon, G. M., Bragg, C. B., & Hartman, M. J. (2015). A meta-analytic examination of the potential correlates and consequences of workload. *Work & Stress*, *29*(2), 95–113. https://doi.org/10.1080/02678373.2015.1033037

Bowling, N. A., & Kirkendall, C. (2012). Workload: A review of causes, consequences, and potential interventions. In J. Houdmont, S. Leka, & R. R. Sinclair (Eds.), *Contemporary Occupational Health Psychology* (pp. 221–238). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119942849.ch13

Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review*, *6*(3), 263–296. https://doi.org/10.1177/1534484307303035

Büssing, A., & Perrar, K.-M. (1992). Die Messung von Burnout. Untersuchung einer deutschen Fassung des Maslach Burnout Inventory (MBI-D). *Diagnostica*, *38*(4), 328–353.

Colbert, A. E., Bono, J. E., & Purvanova, R. K. (2016). Flourishing via workplace relationships: Moving beyond instrumental support. *Academy of Management Journal*, *59*(4), 1199–1223. https://doi.org/10.5465/amj.2014.0506

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye

toward the future. *Journal of Management*, *38*(6), 1715–1759. https://doi.org/10.1177/0149206311415280

Erdogan, B., & Bauer, T. N. (2015). Leader-member exchange theory: A glimpse into the future. In B. Erdogan & T. N. Bauer (Eds.), *The Oxford handbook of leader-member exchange* (pp. 413–421). Oxford University Press.

Feeney, B. C., & Collins, N. L. (2015). A new look at social support: A theoretical perspective on thriving through relationships. *Personality and Social Psychology Review*, *19*(2), 113–147. https://doi.org/10.1177/1088868314544222

Fisher, C. D. (2014). Conceptualizing and measuring wellbeing at work. In C. L. Cooper & P. Y. Chen (Eds.), *Wellbeing: A complete reference guide, work and well-being* (Vol. 3, pp. 1–25). John Wiley & Sons, Ltd.

Fleenor, J. W., Smither, J. W., Atwater, L. E., Braddy, P. W., & Sturm, R. E. (2010). Self–other rating agreement in leadership: A review. *The Leadership Quarterly*, *21*(6), 1005–1034. https://doi.org/10.1016/j.leaqua.2010.10.006

Goh, Z., Ilies, R., & Wilson, K. S. (2015). Supportive supervisors improve employees' daily lives: The role supervisors play in the impact of daily workload on life satisfaction via work–family conflict. *Journal of Vocational Behavior*, *89*, 65–73. https://doi.org/10.1016/j.jvb.2015.04.009

Graen, G. B., Novak, M. A., & Sommerkamp, P. (1982). The effects of leader-member exchange and job design on productivity and satisfaction: Testing a dual attachment model. *Organizational Behavior and Human Performance*, *30*(1), 109–131. https://doi.org/10.1016/0030-5073(82)90236-7

Graen, G. B., & Scandura, T. A. (1987). Toward a psychology of dyadic organizing. *Research in Organizational Behavior*, *9*, 175–208.

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, *6*(2), 219–247. https://doi.org/10.1016/1048-9843(95)90036-5

Greene, C. N., & Schriesheim, C. A. (1980). Leader–group interactions: A longitudinal field investigation. *Journal of Applied Psychology*, *65*(1), 50–59. https://doi.org/10.1037/0021-9010.65.1.50

Gregersen, S., Vincent-Höper, S., & Nienhaus, A. (2016). Job-related resources, leader-member exchange and emotional exhaustion – a longitudinal study. *Work & Stress*, *30*(4), 356–373. https://doi.org/10.1080/02678373.2016.1249440

Gupta, S. K. (2011). Intention-to-treat concept: A review. *Perspectives in Clinical Research*, *2*(3), 109–112. https://doi.org/10.4103/2229-3485.83221

Halbesleben, J. R. B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *The Journal of Applied Psychology*, *91*(5), 1134–1145. https://doi.org/10.1037/0021-9010.91.5.1134

Halbesleben, J. R. B. (2010). A meta-analysis of work engagement: Relationships with burnout, demands, resources, and consequences. In A. B. Bakker & M. P. Leiter (Eds.), *Work engagement: A handbook of essential theory and research* (pp. 102–117). Psychology Press.

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., Brady, J. M., & Perry, M. L. (2020). Training supervisors to support veterans at work: Effects on supervisor attitudes and employee sleep and stress. *Journal of Occupational and Organizational Psychology*, *93*(2), 273–301. https://doi.org/10.1111/joop.12299

Hammer, L. B., Kossek, E. E., Anger, W. K., Bodner, T., & Zimmerman, K. L. (2011). Clarifying work-family intervention processes: The roles of work-family conflict and family supportive supervisor behaviors. *The Journal of Applied Psychology*, *96*(1), 134–150. https://doi.org/10.1037/a0020927

Hammer, L. B., Wan, W. H., Brockwood, K. J., Bodner, T., & Mohr, C. D. (2019). Supervisor support training effects on veteran health and work outcomes in the civilian workplace. *Journal of Applied Psychology*, *104*(1), 52–69. https://doi.org/10.1037/apl0000354

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. (2001). Social support and stress. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 14461–14465). Pergamon. https://doi.org/10.1016/B0-08-043076-7/03823-7

Hobfoll, S. E., Freedy, J., Lane, C., & Geller, P. (1990). Conservation of social resources: Social support resource theory. *Journal of Social and Personal Relationships*, *7*(4), 465–478. https://doi.org/10.1177/0265407590074004

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

House, J. S. (1981). *Work stress and social support*. Addison-Wesley Pub. Co.

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. *The Leadership Quarterly*, *29*(1), 179–202. https://doi.org/10.1016/j.leaqua.2017.12.006

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly*, *61*(2), 121–140. JSTOR. https://doi.org/10.2307/2787065

Kossek, E., Thompson, R., Lawson, K., Bodner, T., Perrigino, M., Hammer, L., Buxton, O., Almeida, D., Moen, P., Hurtado, D., Wipfli, B., Berkman, L., & Bray, J. (2019). Caring for the elderly at work and home: Can a randomized organizational intervention improve psychological health? *Journal of Occupational Health Psychology*, *24*(1), 36–54. https://doi.org/10.1037/ocp0000104

Kristensen, T. S., Hannerz, H., Høgh, A., & Borg, V. (2005). The Copenhagen Psychosocial Questionnaire − a tool for the assessment and improvement of the psychosocial work environment. *Scandinavian Journal of Work, Environment & Health*, *31*(6), 438–449. https://doi.org/10.5271/sjweh.948

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology*, *102*(12), 1686–1718. https://doi.org/10.1037/apl0000241

Liden, R. C., Sparrowe, R., & Wayne, S. J. (1997). Leader-member exchange theory: The past and potential for the future. In G. R. Ferris (Ed.), *Research in personnel and human resources management, Vol. 15* (pp. 47–119). Elsevier Science/JAI Press.

Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1297–1349). Rand McNally.

Mahsud, R., Yukl, G., & Prussia, G. (2010). Leader empathy, ethical leadership, and relations-oriented behaviors as antecedents of leader-member exchange quality. *Journal of Managerial Psychology*, *25*(6), 561–577. https://doi.org/10.1108/02683941011056932

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, *2*(2), 99–113. https://doi.org/10.1002/job.4030020205

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397–422. https://doi.org/10.1146/annurev.psych.52.1.397

Mathieu, M., Eschleman, K. J., & Cheng, D. (2019). Meta-analytic and multiwave comparison of emotional support and instrumental support in the workplace. *Journal of Occupational Health Psychology*, *24*(3), 387–409. https://doi.org/10.1037/ocp0000135

Nübling, M., Stößel, U., Hasselhorn, H.-M., Michaelis, M., & Hofmann, F. (2006). Measuring psychological stress and strain at work: Evaluation of the COPSOQ Questionnaire in Germany. *GMS Psycho-Social Medicine*, *3*, 1–14.

Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology*, *92*(3), 434–457. https://doi.org/10.1037/0022-3514.92.3.434

Pluut, H., Ilies, R., Curşeu, P. L., & Liu, Y. (2018). Social support at work and at home: Dual-buffering effects in the work-family conflict process. *Organizational Behavior and Human Decision Processes*, *146*, 1–13. https://doi.org/10.1016/j.obhdp.2018.02.001

R Core Team. (2019). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing.

Rafferty, A. E., & Griffin, M. A. (2006). Refining individualized consideration: Distinguishing developmental leadership and supportive leadership. *Journal of Occupational and Organizational Psychology*, *79*(1), 37–61. https://doi.org/10.1348/096317905X36731

Rimann, M., & Udris, I. (1997). Subjektive Arbeitsanalyse: Der Fragebogen SALSA. In O. Strohm & E. Ulich (Eds.), *Unternehmen arbeitspsychologisch bewerten. Ein Mehr-Ebenen-Ansatz unter besonderer Berücksichtigung von Mensch, Technik und Organisation* (pp. 281–298). vdf Hochschulverlag.

Schyns, B. (2002). Überprüfung einer deutschsprachigen Skala zum Leader-Member-Exchange-Ansatz. *Zeitschrift für Differentielle und Diagnostische Psychologie*, *23*(2), 235–245. https://doi.org/10.1024//0170-1789.23.2.235

Shaw, J. B., & Weekley, J. A. (1985). The effects of objective work-load variations of psychological strain and post-work-load performance. *Journal of Management*, *11*(1), 87–98. https://doi.org/10.1177/014920638501100108

Sparr, J. L., & Sonnentag, S. (2008). Fairness perceptions of supervisor feedback, LMX, and employee well-being at work. *European Journal of Work and Organizational Psychology*, *17*(2), 198–225. https://doi.org/10.1080/13594320701743590

Warr, P., & Bunce, D. (1995). Trainee characteristics and the outcomes of open learning. *Personnel Psychology*, *48*(2), 347–375. https://doi.org/10.1111/j.1744-6570.1995.tb01761.x

Wright, T. A. (2014). Putting your best "face" forward: The role of emotion-based well-being in organizational research. *Journal of Organizational Behavior*, *35*(8), 1153–1168. https://doi.org/10.1002/job.1967

Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behavior: Integrating a half century of behavior research. *Journal of Leadership & Organizational Studies*, *9*(1), 15–32. https://doi.org/10.1177/10717919020090010

Supplemental Material 1: Process Evaluation

Process Evaluation Procedure

To evaluate the intervention process, we used several sources of information, including records of participant attendance at the training and administrative information on personnel turnover. In addition, we used protocols from the five steering group meetings between September 2017 and May 2018. Participants in the steering group meetings were representatives of the directors in the intervention group, representatives of employees, and representatives of the quality, human resources, and senior management staff of the organization. After the first training session, we conducted a semistructured interview with the trainer. Interview questions included "What went well with the training session?", "What were problems?" and "How did you perceive the atmosphere in the training groups?" The training sessions were observed by members of the research team. The observers used a systematic checklist to evaluate whether the training content was implemented as planned. Immediately after each training session, we assessed the participants' perceptions of the practical relevance and usefulness of the training content with items developed based on Warr and Bunce (1995). The three items that addressed practical relevance focused on the extent to which participants felt that the training content reflected their job requirements (e.g., "The content of today's session fits well with what I experience in my everyday work."). The three items that addressed usefulness assessed how applicable the participants perceived the training to be to their work (e.g., "I will be able to apply the content of today's session to my everyday work."). The responses were scored on a 4-point Likert scale (1 = *disagree* to 4 = *strongly agree*). Cronbach's alphas were 0.80 for relevance and 0.82 for usefulness.

Organizational Context of Intervention Implementation

Analysis of the protocols of the steering group meetings indicated that the key stakeholders were committed to the intervention and that senior management was supportive of the intervention process. The human resource manager expressed support of the directors in the intervention group by

giving an opening speech in the first training session. The organization's project management was well organized in terms of information and communication. Human resources management provided the necessary resources to implement and evaluate the intervention (e.g., assistance in organizing the surveys). Organizational records showed that two directors from the intervention group and six directors from the control group left the organization during the study. Although we have no data on turnover rates at the employee level, the organization noted that turnover was a problem and that multiple employees left the organization before completing the postintervention surveys. After completion of the one-month postintervention survey, the organization underwent a transition period in which new organizational structures were implemented. Specifically, the organization added a middle management level above the director level and changed its reporting structure. The steering group meeting protocols revealed that organizational restructuring resulted in a great deal of uncertainty and stress among the directors.

Reach of the Training

Although participation was mandatory, not all directors assigned to the intervention group participated in the training. Six directors (15%) participated in none of the training sessions, and three directors (7%) participated in only one training session. Nine directors (22%) participated in two training sessions, and 23 directors (56%) participated in all three training sessions. The reasons for nonparticipation included absence due to illness, vacation, termination of employment, and important professional responsibilities that required the presence of the directors in the childcare centers (e.g., staffing difficulties). The directors assigned to the waitlist control group did not take part in the training until after the completion of the study.

Intervention Fidelity and Experiences of the Training

Inspection of the fidelity checks revealed that the key content of the training was covered in all training groups and that there was little variation in the delivery of the training content across training

groups. The reactions of the leaders (N_1 = 35 at the first session, N_2 = 27 at the second session, and N_3 = 29 at the third session) showed that they found the training to be relevant (M_1 = 3.30, SD_1 = 0.56; M_2 = 3.38, SD_2 = 0.58; and M_3 = 3.33, SD_3 = 0.45) and useful (M_1 = 3.11, SD_1 = 0.55; M_2 = 3.44, SD_2 = 0.51; and M_3 = 3.25, SD_3 = 0.48). Analysis of the interview with the trainer revealed that the trainer perceived the leaders' motivation to learn and readiness for change to be high. Additionally, the trainer noted that the initial doubts and concerns about the training that several participants had expressed at the beginning were quickly resolved and that the group climate was characterized by openness and trust. After completion of the training, representatives of the directors in the steering group found that the practical relevance of the training and the useful tools that it provided helped them implement the training content in their everyday work. However, they also reported that time constraints made it difficult for them to recall and apply what they had learned.

Supplemental Table 1. Summary of the Training Content

Module 1: Self-Reflection and Advantages of Supportive Leadership	Module 2: Knowledge and Skills for Engaging in Supportive Behavior	Module 3: Practice and Finetuning of Supportive Leader Behaviors
(1) Start of the session: - Welcoming the participants - Icebreaker games to get to know each other - Clarifying participants' expectations of the training - Clarifying the objectives of the training - Introducing the training logs (2) Interactive lecture on the conceptualization and value of well-being (3) Group discussion on leaders' everyday stressors and resources including their influence on well-being (4) Interactive lecture on the important role of leaders in influencing employee well-being (5) Interactive plenary session on different supportive resources for dealing with stressful experiences at work (6) Group discussion on how leaders may effectively support their employees and what they need to fulfill their leadership role (7) Closing of the session: - Questions and feedback - Goal setting using the training logs	(1) Start of the session: - Refreshing the content of Session 1 - Reflection and discussion on goal progress and successes and challenges in implementing the training content (2) Interactive lecture on how leaders may create supportive work environments: - giving clear information - providing constructive feedback - enabling participation - giving tangible assistance - expressing understanding and appreciation (3) Practical exercise including the development of an action plan to be more supportive of employees (4) Group discussion on what supportive behaviors the leaders already engage in (5) Closing of the session: - Questions and feedback Goal setting using the training logs	(1) Start of the session: - Refreshing the content of Session 2 - Reflection and discussion on goal progress and successes and challenges in implementing the training content (2) Interactive lecture on the importance of understanding employees' individual behaviors, goals, and needs (3) Interactive lecture on how leaders may provide clarity through information and give recognition and constructive feedback (4) Practical exercise and group discussion on how leaders may offer support that is tailored to employees' individual needs (5) Practical exercise and group discussion including a role-playing session with peer feedback for practicing active listening skills and the provision of constructive feedback to employees (6) Closing of the session: - Questions and feedback - Goal setting using the training logs Summary and farewell

Note. A full description of the training content can be obtained from the first author upon request.

Supplemental Table 2. Attrition Analysis: Independent t-Tests

	Responders		Nonresponders			
	M	*SD*	*M*	*SD*	*t*	*df*
One month postintervention						
Age	45.54	11.46	45.74	11.17	–0.20	484.01
Years of professional experience	18.22	11.53	18.00	11.65	0.20	461.28
Condition[a]	0.45	0.50	0.53	0.50	–1.75	483.08
LMX quality	3.64	0.83	3.60	0.83	0.62	470.03
Positive affective well-being	3.35	0.85	3.27	0.83	1.05	482.95
Emotional exhaustion	3.52	1.27	3.51	1.28	0.05	480.56
Job satisfaction	3.70	0.70	3.63	0.69	1.10	479.78
Quantitative workload	2.75	0.93	2.73	0.87	0.19	489.63
Qualitative workload	1.86	0.71	1.83	0.74	0.39	475.00
Six months postintervention						
Age	46.43	10.34	44.97	12.05	1.45	491.68
Years of professional experience	19.30	11.20	17.11	11.81	2.07*	470.55
Condition[a]	0.47	0.50	0.50	0.50	–0.60	479.00
LMX quality	3.71	0.83	3.54	0.83	2.26*	469.00
Positive affective well-being	3.37	0.84	3.27	0.85	1.31	479.38
Emotional exhaustion	3.58	1.32	3.46	1.24	1.03	463.15
Job satisfaction	3.71	0.71	3.64	0.67	1.08	461.74
Quantitative workload	2.78	0.94	2.71	0.86	0.90	461.82
Qualitative workload	1.91	0.73	1.79	0.71	1.82	472.62

Note. Welch's *t*-tests were used. *n* = 266 responders and *n* = 230 nonresponders at one month postintervention. *n* = 226 responders and *n* = 270 nonresponders at six months postintervention. [a] 0 = control group; 1 = intervention group.
*$p < .05$

Supplemental Table 3. Per-Protocol Analysis: Results of the Mixed-Effects Models for Predicting LMX Quality.

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.50***	[3.39, 3.60]	3.50***	[3.41, 3.60]	3.53***	[3.41, 3.66]	3.53***	[3.41, 3.66]
Baseline LMX quality	0.78***	[0.70, 0.87]	0.75***	[0.67, 0.84]	0.75***	[0.65, 0.85]	0.74***	[0.63, 0.85]
Condition[a]	0.18*	[0.03, 0.34]	0.17*	[0.03, 0.33]	0.15	[–0.04, 0.33]	0.14	[–0.04, 0.33]
Baseline quant. workload			–0.08	[–0.18, 0.03]			0.002	[–0.14, 0.14]
Baseline qual. workload			–0.11	[–0.24, 0.02]			–0.12	[–0.30, 0.07]
Condition × quant. workload			0.19*	[0.04, 0.35]			0.04	[–0.17, 0.24]
Condition × qual. workload			–0.03	[–0.24, 0.18]			0.09	[–0.19, 0.36]
Random Effects								
Residual variance	0.21		0.20		0.23		0.22	
Intercept variance	0.03		0.02		0.02		0.03	

Note. *N* = 217 employees nested in 62 childcare centers at one month postintervention. *N* = 145 employees nested in 53 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*p < .05 ***p < .001

Supplemental Table 4. Per-Protocol Analysis: Results of the Mixed-Effects Models for Predicting Positive Affective Well-Being.

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.34***	[3.22, 3.46]	3.34***	[3.22, 3.46]	3.35***	[3.22, 3.49]	3.35***	[3.22, 3.48]
Baseline positive affective well-being	0.64***	[0.53, 0.75]	0.60***	[0.47, 0.73]	0.70***	[0.58 0.82]	0.61***	[0.45, 0.76]
Condition[a]	0.00	[–0.18, 0.19]	0.01	[–0.17, 0.19]	–0.15	[–0.35, 0.05]	–0.14	[–0.33, 0.06]
Baseline quant. workload			0.02	[–0.14, 0.18]			–0.06	[–0.24, 0.12]
Baseline qual. workload			–0.23*	[–0.41, –0.05]			–0.18	[–0.40, 0.05]
Condition × quant. workload			0.07	[–0.15, 0.29]			0.13	[–0.11, 0.38]
Condition × qual. workload			0.10	[–0.18, 0.39]			–0.11	[–0.44, 0.22]
Random Effects								
Residual variance	0.45		0.43		0.37		0.35	
Intercept variance	0.00		0.00		0.00		0.00	

Note. *N* = 225 employees nested in 62 childcare centers at one month postintervention. *N* = 149 employees nested in 53 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*$p < .05$ ***$p < .001$

Supplemental Table 5. Per-Protocol Analysis: Results of the Mixed-Effects Models for Predicting Emotional Exhaustion.

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.62***	[3.49, 3.76]	3.62***	[3.48, 3.75]	3.67***	[3.50, 3.83]	3.66***	[3.49, 3.82]
Baseline emotional exhaustion	0.82***	[0.74, 0.90]	0.76***	[0.68, 0.87]	0.80***	[0.70, 0.90]	0.75***	[0.62, 0.89]
Condition[a]	–0.07	[–0.29, 0.13]	–0.08	[–0.30, 0.12]	–0.05	[–0.21, 0.30]	–0.04	[–0.21, 0.29]
Baseline quant. workload			0.20*	[0.02, 0.37]			0.13	[–0.10, 0.36]
Baseline qual. workload			–0.02	[–0.21, 0.17]			0.12	[–0.17, 0.41]
Condition × quant. workload			–0.39**	[–0.62, –0.16]			–0.28*	[–0.59, 0.04]
Condition × qual. workload			0.26	[–0.05, 0.56]			–0.10	[–0.54, 0.33]
Random Effects								
Residual variance	0.48		0.45		0.59		0.57	
Intercept variance	0.03		0.03		0.00		0.00	

Note. *N* = 222 employees nested in 62 childcare centers at one month postintervention. *N* = 146 employees nested in 53 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*$p < .05$ ***$p < .001$

Supplemental Table 6. *Per-Protocol Analysis: Results of the Mixed-Effects Models for Predicting Job Satisfaction.*

	1-month postintervention				6-months postintervention			
	Intervention effects model		Moderated intervention effects model		Intervention effects model		Moderated intervention effects model	
	Est.	95% CI	Est.	95% CI	Est.	95% CI	Est.	95% CI
Fixed Effects								
Intercept	3.63**	[3.54, 3.72]	3.63**	[3.54, 3.72]	3.59**	[3.50, 3.69]	3.60**	[3.50, 3.69]
Baseline job satisfaction	0.72**	[0.69, 0.86]	0.72**	[0.62, 0.84]	0.79**	[0.70, 0.89]	0.74**	[0.61, 0.86]
Condition[a]	0.06	[–0.07, 0.20]	0.06	[–0.07, 0.20]	0.16*	[0.02, 0.30]	0.16*	[0.02, 0.30]
Baseline quant. workload			–0.08	[–0.18, 0.03]			–0.09	[–0.21, 0.04]
Baseline qual. workload			–0.05	[–0.17, 0.07]			–0.07	[–0.22, 0.09]
Condition × quant. workload			0.07	[–0.07, 0.22]			0.09	[–0.09, 0.26]
Condition × qual. workload			0.06	[–0.13, 0.24]			0.12	[–0.11, 0.36]
Random Effects								
Residual variance	0.18		0.17		0.17		0.16	
Intercept variance	0.02		0.02		0.01		0.05	

Note. *N* = 222 employees nested in 62 childcare centers at one month postintervention. *N* = 146 employees nested in 53 childcare centers at six months postintervention. 95% CI = profile likelihood confidence intervals. [a] 0 = control group; 1 = intervention group.
*$p < .05$ ***$p < .001$

General Discussion

Over the past 20 years, leadership has been shown to be highly associated with employee well-being. In addition to individual approaches, influencing leadership is probably among the most effective and sustainable methods for enhancing employee well-being, because leaders highly influence employees' workplace environment. Although these circumstances are well-known, several questions regarding the relationship between leadership and employee well-being were unanswered at the start of this dissertation work. This work was aimed at identifying and clarifying several aspects of these questions. Specifically, the first publication (Teetzen et al., 2022) illustrated the relative importance of different job resource and job demand categories as indirect mechanisms through which leaders influence multiple categories of employee well-being. While it found all categories of work characteristics to be significant mediators in the TFL-well-being relationship, organizational resources were identified as the strongest mediator.

The second publication (Teetzen et al., in review) identified OHC as a valuable organizational precondition to elicit health-oriented leadership at the team level, and also demonstrated that health-oriented leadership is a mediator by which OHC is transported into the organization and enhances team job satisfaction.

The third publication (Stein, Schümann, Teetzen, et al., 2021) found that a supportive leadership intervention positively influenced social well-being 1-month postintervention. Moreover, it highlighted the importance of considering the boundary conditions of such interventions and identified differences in effectiveness for employees with high vs. low quantitative workload in social well-being and emotional exhaustion.

This section discusses the three publications in terms of their effectiveness in achieving the overall goal of this dissertation and in closing the aforementioned research gaps. It also debates the limitations and implications that can be drawn from this work for research and practice.

4.1 Discussion and Theoretical Implications

4.1.1 Widening the Lens of Research on Leadership and Employee Well-Being

Leadership and employee well-being have long been linked (Skakon et al., 2010). However, the results of this dissertation provide a deeper understanding of some relevant aspects for leaders wanting to enhance employee well-being in their leadership journey.

Leaders and the ones responsible of leadership, must be aware of how the higher organizational level should be designed to complement leadership efforts and enhance employee well-being. Leaders disseminate organizational values, rules and priorities to employees and are often times responsible for their implementation (Dimoff & Kelloway, 2017), thus they need to know how these aspects should be represented. Therefore, the second publication of this work examined organizational climate as a leadership precondition. Specifically, it focused on OHC, a facet-specific organizational climate (Zweber et al., 2015). This aspect is important to encourage health-oriented leadership behaviors, because facet-specificity increases the probability of eliciting the desired behaviors (Biron et al., 2018; Clarke, 2006). Another important point to consider is that the construct of climate can be perceived at different levels (organizational climate vs. psychological climate) (Loh et al., 2019; Schulz et al., 2017) because intergroup dynamics are not equal to between-group processes (Porck et al., 2020; van Knippenberg, 2003). Therefore, a between-team level and a within-team level were differentiated in this publication. Indeed, the relational patterns between health-oriented leadership and job satisfaction and emotional exhaustion were reversed at the different levels (i.e., health-oriented leadership was significantly associated with job satisfaction at the between-team level but not the within-team level, while an opposite pattern was observed for emotional exhaustion). Moreover, health-oriented leadership was found to significantly mediate the relationship between OHC and employee job satisfaction only at the between-team level. Thus, this publication indicated the value of being facet-specific and performing analyses at different levels to detect differences in relational patterns. Although some studies have applied such an approach (e.g., Porck et al., 2020; Schulz et al., 2017), more research is needed to spread the added value of this procedure.

The second highly important aspect of knowledge for leaders is exactly how to enhance employee well-being. The first publication indicated that the design of organizational resources as most fruitful. However, it also indicated different relational patterns in the examined mediators depending on the well-being outcome: whereas job demands were more strongly associated with negative well-being outcomes, job resources were more strongly associated with positive well-being outcomes. These results indicate a relative difference in the relevance of work characteristics at different organizational levels and suggest that some categories are more important than others, depending on the goal (e.g., increasing positive well-being vs. decreasing negative well-being). The findings also highlight that if one category of work characteristics is

found to be a strong mediator of a specific relationship among variables, it may not necessarily apply to another category in the same way. Thus, a (simultaneous) investigation of different organizational levels and/or the conscious choice of mediators and outcomes depending on the goal of the research appears to be warranted (see also Inceoglu et al., 2021).The publication sorted and categorized the abundant existing research findings on the mechanisms influencing the link between TFL and employee well-being, to provide guidance for future research on well-being outcome categories and their most influential mediators in relation to TFL.

A third important objective for leaders and responsible individuals is the dissemination of the gained knowledge, to identify interventions that effectively enhance employee well-being. The third publication shifted the focus of the topic on employee well-being interventions in two ways. In targeting improvements in employee well-being, many approaches have focused on individual employees through personal approaches (e.g., stress management training, resilience coaching and awareness practices). However, the effectiveness of these interventions is only short-term, and ceiling effects may occur (de Wijn & van der Doef, 2022; Hammer et al., 2019). Moreover, as demonstrated in the first publication in this work, indirect pathways (i.e., mediation via work characteristics) through which employee well-being is influenced play a major role in effectiveness. These pathways can be designed most effectively by focal figures in the organization, i.e., the leaders (Dietz et al., 2020; Nielsen, 2017). Thus, this publication showed that an indirect improvement in employee well-being is possible via the action of influential players designing the employees' work environments. However, it also suggested the need for considering boundary conditions that can increase or decrease the effectiveness of interventions.

The second focus shift of the third publication was the movement away from improving impaired well-being toward a focus on enhancing positive well-being with an emphasis on a resource gain perspective rather than a loss perspective by relying on the conservation of resources theory (Hobfoll, 1989). By focusing on the enhancement of positive well-being, the study complements existing intervention approaches that mainly apply impairment relief or prevention (e.g., stress management or burnout prevention) (Burgess et al., 2020).

The three publications in this work each highlight another focal point in the relationship between leadership and employee well-being (Figure 1), thus complementing one another and enhancing the understanding of the interplay between leadership and well-being. Keeping in mind the limitations of the publications, the research gaps described in the introduction have

been filled. The following sections discuss two important aspects that the publications have in common.

4.1.2 Resources at the Organizational Level

Two publications in this work found that organizational resources play an important role in enhancing employee well-being. Whereas the first publication (Teetzen et al., 2022) identified organizational resources, such as organizational climate, organizational justice or perceived organizational support, as the most potent means through which leaders can enhance employee well-being compared to other work characteristics, the second publication (Teetzen et al., in review) identified OHC as a valuable precursor for leadership. Meanwhile, other studies have indicated the problems that occur when organizational resources are missing or even become organizational stressors: For example, a study by Ng, Zhang and Chen (2021) has found that competition in the organization—which can be a resource in the organization when paired with a psychologically safe culture in which mistakes are welcome—becomes a trigger of abusive supervision for leaders through induced stress when this competition was fueled by a climate of blame. Thus, the examination of organizational resources provides valuable knowledge for examining employee well-being and should be included in addition to other resources in future works (Nielsen et al., 2017). Of course, the implementation of them may be contingent on boundary conditions, such as the personal organizational identification, which influenced the degree to which leaders' health mindset developed from an organizational health climate in a study by Kaluza et al. (2020).

4.1.3 Crossover of Resources at Different Organizational Levels

The publications in this dissertation were resource focused and included resources at various organizational levels. Leadership itself is often viewed as a resource for employees (Bakker & Demerouti, 2007). Research has begun to examine how resources at different levels of an organization (e.g., the leader and organizational level) can produce a crossover of resources within the organization (Hobfoll et al., 2018). Just as one burned out employee can create a burnout climate in an organization via crossover, organizational resources can create positive crossover experiences in an organization when paired with, for example, leader resources, thus increasing well-being experiences (Westman, 2001). The second publication in this work

provides evidence of enhanced job satisfaction in a team because a crossover of organizational and leadership resources formed a resource caravan for employees (Hobfoll et al., 2018). Thus, as proposed in previous research (e.g., Nielsen et al., 2017), this dissertation confirms the notion that the examination and implementation of resources at multiple organizational levels induces better well-being results.

4.2 Limitations and Implications for Future Research

Although the publications provided valuable insights, they are not without limitations. Some of the limitations of each individual publication have been discussed in the publications themselves. Several more general difficulties and limiting aspects are discussed in this section.

4.2.1 The Use and Application of Employee Well-Being in this Dissertation

As described in the second section of this work, many approaches exist for defining and categorizing employee well-being. To date, no common understanding has been reached to provide one consistent classification.

The challenge with coexisting classifications of well-being is that every study conceptualizes employee well-being differently; that challenge was relevant in the meta-analysis of the evidence of employee well-being in the first publication. I selected one framework of employee well-being (see publication) that might not have fit the views of all primary studies. Thus, assigning some variables in the primary studies consistently to a category (e.g., general contentness, happiness and subjective well-being) was very difficult. This aspect contributed to heterogeneity in the categories and should be kept in mind in the interpretation of the results. Reaching a common understanding of well-being in the future would be invaluable for this research field.

In addition, the definition of well-being was not consistent across the publications in this dissertation. Whereas the first publication purposefully excluded job satisfaction as a component of well-being, because doing so would have confounded the concepts of well-being and TFL, the second publication did include job satisfaction as a part of well-being. It did so to include an evaluative component capable of revealing an attitudinal aspect of well-being in the entire team (Locke, 1979). The third publication added the component of social well-being, which was not an element in the first two publications. These examples illustrate the widely differentiated use of

the concept of employee well-being, which does not contibute to the comparability of research results. Again, it would be wishful to come to a common understanding of the concept and to agree on common categories.

4.2.2 Limitations and Implications Regarding the First Publication

Regarding the first publication, the choice of TFL as a leadership measure regarding employee well-being warrants discussion. TFL has been criticised for lacking a conceptual and operational definition, and for applying an imprecise and confounding measurement (van Knippenberg & Sitkin, 2013). Additionally, regarding employee well-being, research has identified TFL as being a double-edged sword that can "tip over" in negative leadership responses in some situations or for specific employee personalities (e.g., Diebig et al., 2016, 2017). Despite these valid concerns, TFL was chosen for this meta-analysis. Many qualities of transformational leaders are conducive to employee well-being, as also indicated by the multitude of publications finding positive relationships between the variables. In addition, when the publication was planned in 2015, TFL was one of the most studied leadership concepts in relation to employee well-being, and therefore a relative comparison of the research was indicated. Moreover, the incremental variance of other emerging leadership concepts at that time was very low (Hoch et al., 2018). Thus, the choice of the concept can be criticized but was sensible in terms of the goal of the publication.

Another limitation of the first publication was the choice of very broad categories of work characteristics and employee well-being states, which created high heterogeneity. Such broad categories were necessary to ensure a sufficiently high number of publications within each category. However, this choice came at the cost of the preciseness of interpretability, because very broad measures, such as the General Health Questionnaire (Goldberg & Williams, 1988), needed to be chosen for one well-being category (i.e., "subjective well-being"), although some items (e.g., "Over the last few weeks, have you felt constantly under strain?") could also have fit in another category (i.e., "irritated-distressed", see also discussion above). Similarly, for example, the work characteristic "psychological cimate" included dimensions that pertained to the "relational" job resource category (i.e., supportive management) while also entailing one indicating "task-relation" (i.e., role clarity). In such cases, the majority of items fitting in a

category had to decide. Together these circumstances "diluted" the results, and this aspect must be kept in mind when interpreting the results.

4.2.3 Limitations and Implications Regarding the Second Publication

The second publication was designed as a multilevel-study with employees being nested in teams. However, all the teams belonged to the same overarching union that implemented and steered the organizational health management and thus the organizational (health) policies. This aspect may prompt questions regarding the variance in OHC among teams, which was also indicated by the low ICC value of this variable (ICC[1] =.08). However, child care centers are structurally different from large economic organizations. Individual employees often do not have direct access to a computer, and their work design requires news, policies or changes to be delivered to the whole team instead of to subgroups or by the use of protocols that can easily be accessed by individual employees. These factors increased the likelihood of a perception of actions and policies of the overarching union being formed in the whole team via team meetings and/or via the team leader (who is usually in contact with the overarching union). Regional managers installed at an additional level between union and individual centers could also have been responsible for variance in the perceptions of teams. Nonetheless, the results would have been more robust if different organizations were examined. Future research should consider the structural conditions faced by the examined organizations.

A discussion that falls into line with the former one is the question of what influences what: does leadership influence climate or the other way around? From the argument above, child care center directors might be concluded to shape the teams' climate perception, because of their provision of news and information, and their related attitudes. Indeed, some studies on leadership and climate have posited this ordering of the variables (e.g., Loh et al., 2021; Schneider et al., 2017). However, as outlined in the publication, evidence suggest that leaders can enact only climate that they perceive and then act as mouthpieces of the organization (Nielsen, 2017). Unfortunately, owing to insufficient power, the sample did not allow for a cross-lagged panel of all variables, which would have provided evidence of the ordering of the variables in the sample. A previous study that conducted a cross-lagged panel of the variables of mangerial quality and psychosocial safety climate has positioned climate temporally before

leadership (Biron et al., 2018). Thus, the results remain inconclusive and should be analyzed more deeply in future work.

4.2.4 Limitations and Implications Regarding the Third Publication

The third publication evaluated a leadership training intervention. The process of the intervention implementation was not ideal. Not all leaders appointed to the intervention group actually participated in all three training sessions, thus decreasing the likelihood of their implementing the training content. Because of the resulting smaller number of intervention group leaders who had attended all training sessions, detection of long-term effects was challenging. Moreover, the intervention was staged in a period that was particularly challenging for employees and leaders for two reasons. First, it occurred at the start of a new school year, which involves new children, new groups and new procedures for child care centers, and is a stressful time for all employees every year. Second, it occurred during restructuring of the overarching union, which resulted in many uncertainties and additional stress in the centers. Because circumstances such as these can be revealed only during a process evaluation, future intervention research should incorporate this feature as a fixed element of intervention evaluation (Biron & Karanika-Murray, 2014; Nielsen et al., 2006; Nielsen, Taris, et al., 2010).

Although this point was also described in the publication, I would like to stress that the design of the study does not allow conclusions to be drawn regarding the mechanisms through which the intervention worked or did not work. We have no indication of the effect of the training on leadership (i.e., did it improve relationship-oriented or health-oriented leadership?) or the ways in which employees were affected. The significant intervention effect on LMX quality might potentially have been due to perceived increased attention of the leader or a perception of more frequent interaction that was unrelated to the training content in the intervention. Future intervention research should measure such mechanisms to understand *why* an intervention was effective, and consequently which elements to focus on and which ones to ignore. This point also connects to the next section.

4.2.5 Future Research Directions Regarding Leadership and Employee Well-Being

As shown in Figure 2, research on leadership and employee well-being has investigated many areas. However, the complexity of this field necessitates investigation of many more areas.

Figure 3 provides an overview of additional influencing factors to be studied and future avenues of discovery. For example, environmental context factors (e.g., societal influences, such as norms, culture and laws) should complement research within the organizational scope (Inceoglu et al., 2021; Oc, 2018). Similarly, previous observations have clarified that most relationships are influenced by a multitude of boundary conditions. Knowledge regarding such conditions is necessary to judge the validity of individual relationships when considering leadership and employee well-being, as one could see in the third publication. Research has substantially advanced this idea in recent years; however, much more must be done to provide a reliable picture of what works for whom and when (Nielsen & Miraglia, 2017).

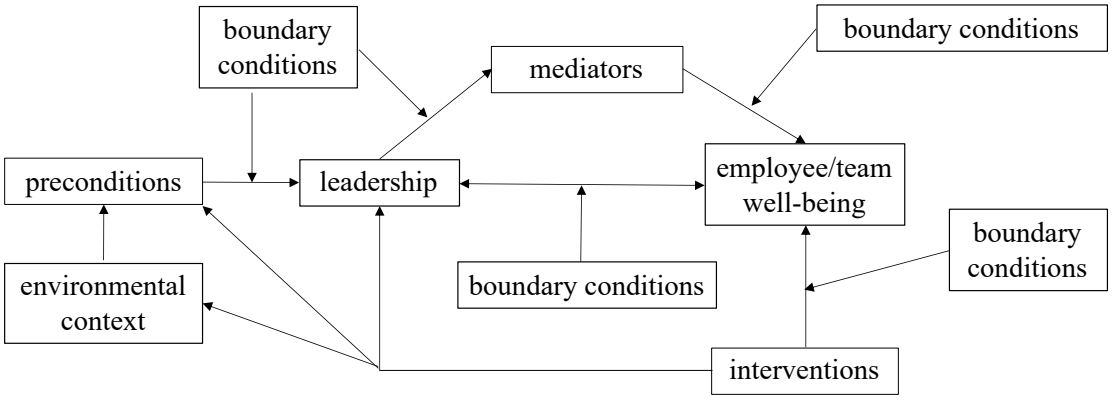

Figure 3. Present and future research on influence factors regarding leadership and employee well-being.

In addition, many calls have been made for longitudinal analyses to clarify the reciprocal relationship between leadership and employee well-being (e.g., Nielsen & Taris, 2019), and multiple organizational levels must be addressed for most influencing factors to gain knowledge regarding the complexity of the relationships (see Figure 3) (Inceoglu et al., 2021).

4.3 Practical Implications

The social care sector is a highly stressed and understaffed workforce. This dissertation focused on this industrial sector to investigate possibilities of how to enhance employee well-being in this sector, particularly for childcare employees. Although this sector has many inevitable job demands (e.g., workload, work pressure, work-family conflict and emotional demands) and insufficient job resources (e.g., decision latitude, leadership, financial rewards and development opportunities) (McVicar, 2016), the first publication in this work provides guidance regarding

which employee job demands and job resources should be influenced via leadership when they *can* be influenced, to improve specific aspects of employee well-being. The target work characteristics that leaders should influence can thereby be adjusted to individual organizations' needs (e.g., increasing affective-motivational well-being vs. decreasing depressed-exhausted well-being).

Because organizational resources have been identified as the strongest mediator of the relationship between leadership and employee well-being in the first publication, and OHC was identified as a valuable precondition for health-oriented leadership in the second publication, the implementation of OHC might be an important means of increasing well-being in teams. The facet-specificity of OHC and health-oriented leadership behaviors increases credibility in the organization, owing to congruence between words and actions (Dollard et al., 2012; Hauff et al., 2022).

Additionally, the third publication in this work complements reported evidence indicating that interventions targeting leaders (i.e., the directors of child care centers) is an effective approach for enhancing the relationships between leaders and employees (Christensen et al., 2019; Dimoff & Kelloway, 2017), and potentially increasing mental health through targeting health-oriented leadership behaviors (Stuber et al., 2021). This finding is particularly valuable for childcare centers, because relieving childcare workers of their group duties for several (consecutive) days is often highly laborious. Implementation is easier when childcare center directors, who are usually less involved in group duties than childcare workers, can perform this task. Thus, this work contributes to a better understanding of how interventions should be designed to increase their effectiveness in childcare centers.

Conclusion

Workplace well-being should be a matter of concern for organizations, particularly in the social care sector. This dissertation examined leadership as a focal point through which the well-being of employees can be influenced. Although leadership has long been identified as being associated with employee well-being, this work contributes to an understanding of the relationship in more detail by advancing research on antecedents, mediators and interventions of leadership in relation to employee well-being. However, as in many research fields, this field is ever evolving. Thus, this work delineated several research gaps that remain to be addresed in future research. My hope for this field of research is better communication between the disciplines of research and practice. According to my perception, research on leadership and employee well-being is not well utilized (and may even not be known) in the world of practice, whereas research is not sufficiently attentive to the needs expressed in practice. If both disciplines were to interact in a more persevering way, research results could be more sustainably applied in practice. I am grateful to have insight into both the research and practice worlds to aid in leaders enhancing employee well-being in an effective and sustainable manner.

References

Alilyyani, B., Wong, C. A., & Cummings, G. (2018). Antecedents, mediators, and outcomes of authentic leadership in healthcare: A systematic review. *International Journal of Nursing Studies*, *83*, 34–64. https://doi.org/10.1016/j.ijnurstu.2018.04.001

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

Arnold, K. A., Turner, N., Barling, J., Kelloway, E. K., & McKee, M. C. (2007). Transformational leadership and psychological well-being: The mediating role of meaningful work. *Journal of Occupational Health Psychology*, *12*(3), 193–203. https://doi.org/10.1037/1076-8998.12.3.193

Arnold, M., & Rigotti, T. (2020). The Leader in the Spotlight: Health-oriented Leadership and its Antecedents and Outcomes. *Academy of Management Proceedings*, *1*. https://doi.org/10.5465/AMBPP.2020.16724abstract

Avolio, B. J., & Bass, B. M. (2004). Multifactor Leadership Questionnaire (MLQ). *Mind Garden*, *29*.

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

Biron, C., & Karanika-Murray, M. (2014). Process evaluation for organizational stress and well-being interventions: Implications for theory, method, and practice. *International Journal of Stress Management*, *21*(1), 85–111. https://doi.org/10.1037/a0033227

Biron, C., Parent-Lamarche, A., Ivers, H., & Baril-Gingras, G. (2018). Do as you say: The effects of psychosocial safety climate on managerial quality in an organizational health intervention. *International Journal of Workplace Health Management*, *11*(4), 228–244. https://doi.org/10.1108/IJWHM-01-2018-0009

Brenscheidt, S., Siefer, A., Hünefeld, L., Backhaus, N., & Halke, T. (2022). *Arbeitswelt im Wandel Zahlen – Daten – Fakten Ausgabe 2022 [Changing world of work; numbers—Dates—Facts; edition 2022]*. Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA). https://www.baua.de/DE/Angebote/Publikationen/Praxis/A107.html

Burgess, M. G., Brough, P., Biggs, A., & Hawkes, A. J. (2020). Why interventions fail: A systematic review of occupational health psychology interventions. *International Journal of Stress Management*, *27*(2), 195–207. https://doi.org/10.1037/str0000144

Christensen, M., Innstrand, S. T., Saksvik, P. Ø., & Nielsen, K. (2019). The Line Manager's Role in Implementing Successful Organizational Interventions. *The Spanish Journal of Psychology*, *22*, E5. https://doi.org/10.1017/sjp.2019.4

Clarke, S. (2006). The relationship between safety climate and safety performance: A meta-analytic review. *Journal of Occupational Health Psychology*, *11*(4), 315–327. https://doi.org/10.1037/1076-8998.11.4.315

Danna, K., & Griffin, R. W. (1999). Health and Well-Being in the Workplace: A Review and Synthesis of the Literature. *JOURNAL OF MANAGEMENT*, *25*(3), 28.

Dannheim, I., Ludwig-Walz, H., Buyken, A. E., Grimm, V., & Kroke, A. (2021). Effectiveness of health-oriented leadership interventions for improving health and wellbeing of employees: A systematic review. *Journal of Public Health*. https://doi.org/10.1007/s10389-021-01664-1

de Wijn, A. N., & van der Doef, M. P. (2022). A meta-analysis on the effectiveness of stress management interventions for nurses: Capturing 14 years of research. *International Journal of Stress Management*, *29*(2), 113–129. https://doi.org/10.1037/str0000169

Diebig, M., Bormann, K. C., & Rowold, J. (2016). A double-edged sword: Relationship between full-range leadership behaviors and followers' hair cortisol level. *The Leadership Quarterly*, *27*(4), 684–696. https://doi.org/10.1016/j.leaqua.2016.04.001

Diebig, M., Poethke, U., & Rowold, J. (2017). Leader strain and follower burnout: Exploring the role of transformational leadership behaviour—Mathias Diebig, Ute Poethke, Jens Rowold, 2017. *German Journal of Human Resource Management*, *31*(4), 329–348. https://doi.org/10.1177/2397002217721077

Diener, E., & Seligman, M. E. P. (2004). Toward an Economy of Well-Being. *Psychological Science in the Public Interest*, *5*(1), 1–31.

Dietz, C., Zacher, H., Scheel, T., Otto, K., & Rigotti, T. (2020). Leaders as role models: Effects of leader presenteeism on employee presenteeism and sick leave. *Work & Stress*, *34*(3), 300–322. https://doi.org/10.1080/02678373.2020.1728420

Dimoff, J. K., & Kelloway, E. K. (2017). Leaders as resources: How managers and supervisors can socially support employees towards better mental health and wellbeing. In E. K. Kelloway, K. Nielsen, & J. K. Dimoff (Hrsg.), *Leading to Occupational Health and Safety* (S. 149–162). Wiley Blackwell.

Dollard, M. F., Dormann, C., & Idris, M. A. (2019). Psychosocial Safety Climate: A New Work Stress Theory and Implications for Method. In *Psychosocial Safety Climate—A New Work Stress Theory* (S. 3–30). Springer Nature Switzerland AG.

Dollard, M. F., Tuckey, M. R., & Dormann, C. (2012). Psychosocial safety climate moderates the job demand–resource interaction in predicting workgroup distress. *Accident Analysis & Prevention*, *45*, 694–704. https://doi.org/10.1016/j.aap.2011.09.042

Fox, K. E., Johnson, S. T., Berkman, L. F., Sianoja, M., Soh, Y., Kubzansky, L. D., & Kelly, E. L. (2022). Organisational- and group-level workplace interventions and their effect on multiple domains of worker well-being: A systematic review. *Work & Stress*, *36*(1), 30–59. https://doi.org/10.1080/02678373.2021.1969476

Franke, F., Felfe, J., & Pundt, A. (2014). The Impact of Health-Oriented Leadership on Follower Health: Development and Test of a New Instrument Measuring Health-Promoting Leadership. *German Journal of Human Resource Management*, *28*(1–2), 139–161. https://doi.org/10.1177/239700221402800108

Goldberg, D., & Williams, P. A. (1988). *A user's guide to the General Health Questionnaire.* NFER-Nelson.

Gregersen, S., Kuhnert, S., Zimber, A., & Nienhaus, A. (2011). Führungsverhalten und Gesundheit—Zum Stand der Forschung. *Das Gesundheitswesen*, *73*(1), 3–12. https://doi.org/10.1055/s-0029-1246180

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

Hammer, L. B., Truxillo, D. M., Bodner, T., Pytlovany, A. C., & Richman, A. (2019). Exploration of the impact of organisational context on a workplace safety and health intervention. *Work & Stress*, *33*(2), 192–210. https://doi.org/10.1080/02678373.2018.1496159

Hauff, S., Krick, A., Klebe, L., & Felfe, J. (2022). High-Performance Work Practices and Employee Wellbeing—Does Health-Oriented Leadership Make a Difference? *Frontiers in Psychology*, *13*, 833028. https://doi.org/10.3389/fpsyg.2022.833028

Hentrich, S., Zimber, A., Garbade, S. F., Gregersen, S., Nienhaus, A., & Petermann, F. (2017). Relationships between transformational leadership and health: The mediating role of perceived job demands and occupational self-efficacy. *International Journal of Stress Management*, *24*(1), 34–61. https://doi.org/10.1037/str0000027

Hickmann, H., & Koneberg, F. (2022). *Die Berufe mit den aktuell größten Fachkräftelücken* (IW-Kurzbericht Nr. 67/2022; S. 1–3). Institut der Deutschen Wirtschaft.

Hobfoll, S. E. (1989). Conservation of Resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524.

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

Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do Ethical, Authentic, and Servant Leadership Explain Variance Above and Beyond Transformational Leadership? A Meta-Analysis. *Journal of Management*, *44*(2), 501–529. https://doi.org/10.1177/0149206316665461

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. *The Leadership Quarterly*, *29*(1), 179–202. https://doi.org/10.1016/j.leaqua.2017.12.006

Kaluza, A. J., & Junker, N. M. (2022). Caring for yourself and for others: Team health climate and self-care explain the relationship between health-oriented leadership and exhaustion. *Journal of Managerial Psychology*, *37*(7), 655–668. https://doi.org/10.1108/JMP-10-2021-0567

Kaluza, A. J., Schuh, S. C., Kern, M., Xin, K., & Dick, R. (2020). How do leaders' perceptions of organizational health climate shape employee exhaustion and engagement? Toward a cascading-effects model. *Human Resource Management*, *59*(4), 359–377. https://doi.org/10.1002/hrm.22000

Kim, S., Cho, S., & Park, Y. (2022). Daily microbreaks in a self-regulatory resources lens: Perceived health climate as a contextual moderator via microbreak autonomy. *Journal of Applied Psychology*, *107*(1), 60–77. https://doi.org/10.1037/apl0000891

Klug, K., Felfe, J., & Krick, A. (2022). Does Self-Care Make You a Better Leader? A Multisource Study Linking Leader Self-Care to Health-Oriented Leadership, Employee Self-Care, and Health. *International Journal of Environmental Research and Public Health*, *19*(11), 6733. https://doi.org/10.3390/ijerph19116733

Kordt, M. (2014a). *DAK Gesundheitsreport 2014*. DAK Forschung.

Kordt, M. (2014b). *Gesundheitsreport 2014. Die Rushhour des Lebens. Gesundheit im Spannungsfeld von Job, Karriere und Familie.* (DAK-Gesundheitsreport 2014, S. 1–157). DAK Forschung.

Krick, A., Felfe, J., Hauff, S., & Renner, K.-H. (2022). Facilitating Health-Oriented Leadership from a Leader's Perspective: Antecedents at the Organizational, Workplace, and Individual Level. *German Journal of Work and Organizational Psychology*, *66*(4), 213–225. https://doi.org/10.1026/0932-4089/a000397

Krick, A., Felfe, J., & Pischel, S. (2022). Health-oriented leadership as a job resource: Can staff care buffer the effects of job demands on employee health and job satisfaction? *Journal of Managerial Psychology*, *37*(2), 139–152. https://doi.org/10.1108/JMP-02-2021-0067

Locke, E. A. (1979). The nature and causes of job satisfaction. In M. D. Dunnette (Hrsg.), *Handbook of industrial and organizational psychology* (S. 1297–1349). Rand McNally.

Loh, M. Y., Dollard, M. F., McLinton, S. S., & Tuckey, M. R. (2021). How psychosocial safety climate (PSC) gets stronger over time: A first look at leadership and climate strength. *Journal of Occupational Health Psychology*, *26*(6), 522–536. https://doi.org/10.1037/ocp0000308

Loh, M. Y., Idris, M. A., Dollard, M. F., & Isahak, M. (2018). Psychosocial safety climate as a moderator of the moderators: Contextualizing JDR-models and emotional demands

effects. *Journal of Occupational and Organizational Psychology*, *91*(3), 620–644. https://doi.org/10.1111/joop.12211

Loh, M. Y., Idris, M. A., Dormann, C., & Muhamad, H. (2019). Organisational climate and employee health outcomes: A systematic review. *Safety Science*, *118*, 442–452. https://doi.org/10.1016/j.ssci.2019.05.052

Marschall, J., Hildebrandt, S., & Nolting, H.-D. (2019). *DAK Gesundheitsreport 2019* (S. 252) [Gesundheitsreport]. DAK.

Mathieu, J. E., & Taylor, S. R. (2007). A framework for testing meso-mediational relationships in Organizational Behavior. *Journal of Organizational Behavior*, *28*(2), 141–172. https://doi.org/10.1002/job.436

McKee, M. C., Driscoll, C., Kelloway, E. K., & Kelley, E. (2011). Exploring linkages among transformational leadership, workplace spirituality and well-being in health care workers. *Journal of Management, Spirituality & Religion*, *8*(3), 233–255. https://doi.org/10.1080/14766086.2011.599147

McVicar, A. (2016). Scoping the common antecedents of job stress and job satisfaction for nurses (2000-2013) using the job demands-resources model of stress. *Journal of Nursing Management*, *24*(2), E112–E136. https://doi.org/10.1111/jonm.12326

Montano, D., Reeske, A., Franke, F., & Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective: Leadership and Followers' Mental Health. *Journal of Organizational Behavior*, *38*(3), 327–350. https://doi.org/10.1002/job.2124

Ng, B. C. S., Zhang, X., & Chen, Z. X. G. (2021). A stress perspective on antecedents of abusive supervision: Blaming the organisation when exhausted supervisors abuse. *Journal of Management & Organization*, *27*(2), 361–381. https://doi.org/10.1017/jmo.2018.71

Nielsen, K. (2013). Review Article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*, *66*(8), 1029–1050. https://doi.org/10.1177/0018726713477164

Nielsen, K. (2017). Leaders can make or break an intervention—But are they the villains of the piece? In E. K. Kelloway, K. Nielsen, & J. K. Dimoff (Hrsg.), *Leading to occupational health and safety: How leadership behaviours impact organizational safety and well-being* (S. 197–211). Wiley Blackwell.

Nielsen, K., & Daniels, K. (2012). Does shared and differentiated transformational leadership predict followers' working conditions and well-being? *The Leadership Quarterly*, *23*(3), 383–397. https://doi.org/10.1016/j.leaqua.2011.09.001

Nielsen, K., Fredslund, H., Christensen, K. B., & Albertsen, K. (2006). Success or failure? Interpreting and understanding the impact of interventions in four similar worksites. *Work & Stress*, *20*(3), 272–287. https://doi.org/10.1080/02678370601022688

Nielsen, K., & Miraglia, M. (2017). What works for whom in which circumstances? On the need to move beyond the 'what works?' question in organizational intervention research. *Human Relations*, *70*(1), 40–62. https://doi.org/10.1177/0018726716670226

Nielsen, K., & Munir, F. (2009). How do transformational leaders influence followers' affective well-being? Exploring the mediating role of self-efficacy. *Work & Stress*, *23*(4), 313–329.

Nielsen, K., Nielsen, M. B., Ogbonnaya, C., Känsälä, M., Saari, E., & Isaksson, K. (2017). Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis. *Work & Stress*, *31*(2), 101–120. https://doi.org/10.1080/02678373.2017.1304463

Nielsen, K., Randall, R., Holten, A.-L., & González, E. R. (2010). Conducting organizational-level occupational health interventions: What works? *Work & Stress*, *24*(3), 234–259. https://doi.org/10.1080/02678373.2010.515393

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. https://doi.org/10.1080/02678373.2019.1592263

Nielsen, K., Taris, T. W., & Cox, T. (2010). The future of organizational interventions: Addressing the challenges of today's organizations. *Work & Stress*, *24*(3), 219–233. https://doi.org/10.1080/02678373.2010.519176

Oc, B. (2018). Contextual leadership: A systematic review of how contextual factors shape leadership and its outcomes. *The Leadership Quarterly*, *29*(1), 218–235. https://doi.org/10.1016/j.leaqua.2017.12.004

Paustian-Underdahl, S. C., Shanock, L. R., Rogelberg, S. G., W. Scott, C., Justice, L., & Altman, D. G. (2013). Antecedents to supportive supervision: An examination of biographical data. *Journal of Occupational and Organizational Psychology*, *86*(3), 288–309. https://doi.org/10.1111/joop.12019

Porck, J. P., van Knippenberg, D., Tarakci, M., Ates, N. Y., Groenen, P. J. F., & de Haas, M. (2020). Do Group and Organizational Identification Help or Hurt Intergroup Strategic Consensus? *Journal of Management*, *46*(2), 234–260. https://doi.org/10.1177/0149206318788434

Roodbari, H., Axtell, C., Nielsen, K., & Sorensen, G. (2022). Organisational interventions to improve employees' health and wellbeing: A realist synthesis. *Applied Psychology*, *71*(3), 1058–1081. https://doi.org/10.1111/apps.12346

Ryff, C. D. (1989). Happiness is everything, or is it? Exploration of the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *61*(3), 317–342. https://doi.org/10.1037//0022-3514.57.6.1069

Salanova, M., Del Líbano, M., Llorens, S., & Schaufeli, W. B. (2014). Engaged, Workaholic, Burned-Out or Just 9-to-5? Toward a Typology of Employee Well-being: Employee Well-being and Work Investment. *Stress and Health*, *30*(1), 71–81. https://doi.org/10.1002/smi.2499

Schneider, B., Gonzáles-Romá, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology*, *102*(3), 468–482. https://doi.org/10.1037/apl0000090

Schulz, H., Zacher, H., & Lippke, S. (2017). The Importance of Team Health Climate for Health-Related Outcomes of White-Collar Workers. *Frontiers in Psychology*, *08*(74). https://doi.org/10.3389/fpsyg.2017.00074

Shanock, L. R., & Eisenberger, R. (2006). When supervisors feel supported: Relationships with subordinates' perceived supervisor support, perceived organizational support, and performance. *Journal of Applied Psychology*, *91*(3), 689–695. https://doi.org/10.1037/0021-9010.91.3.689

Sharma, P. N. (2018). Moving beyond the employee: The role of the organizational context in leader workplace aggression. *The Leadership Quarterly*, *29*(1), 203–217. https://doi.org/10.1016/j.leaqua.2017.12.002

Skakon, J., Nielsen, K., Borg, V., & Guzman, J. (2010). Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research. *Work & Stress*, *24*(2), 107–139. https://doi.org/10.1080/02678373.2010.495262

Sockoll, I., Kramer, I., & Bödeker, W. (2008). *Wirksamkeit und Nutzen betrieblicher Gesundheitsförderung und Prävention: Zusammenstellung der wissenschaftlichen Evidenz 2000 bis 2006 [Effectiveness and use of organizational health management and prevention: Research evidence from 2000 until 2006].* (IGA-Report Nr. 13). BKK Bundesverband.

Stein, M., Schümann, M., Teetzen, F., Gregersen, S., Begemann, V., & Vincent-Höper, S. (2021). Supportive leadership training effects on employee social and hedonic well-being: A cluster randomized controlled trial. *Journal of Occupational Health Psychology*, *26*(6), 599–612. https://doi.org/10.1037/ocp0000300

Stein, M., Schümann, M., & Vincent-Höper, S. (2021). A conservation of resources view of the relationship between transformational leadership and emotional exhaustion: The role of extra effort and psychological detachment. *Work & Stress*, *35*(3), 241–261. https://doi.org/10.1080/02678373.2020.1832610

Stuber, F., Seifried-Dübon, T., Rieger, M. A., Gündel, H., Ruhle, S., Zipfel, S., & Junne, F. (2021). The effectiveness of health-oriented leadership interventions for the improvement of mental health of employees in the health care sector: A systematic review. *International Archives of Occupational and Environmental Health*, *94*(2), 203–220. https://doi.org/10.1007/s00420-020-01583-w

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. https://doi.org/10.3390/ijerph19053133

Teetzen, F., Klug, K., Steinmetz, H., Gregersen, S., & Vincent-Höper, S. (in review). Organizational health climate as a precondition for health-oriented leadership: Expanding the link between leadership and employee well-being. *Frontiers in Psychology*.

Tuncdogan, A., Acar, O. A., & Stam, D. (2017). Individual differences as antecedents of leader behavior: Towards an understanding of multi-level outcomes. *The Leadership Quarterly*, *28*(1), 40–64. https://doi.org/10.1016/j.leaqua.2016.10.011

van Knippenberg, D. (2003). Intergroup relations in organizations. In M. A. West, D. Tjosvold, & K. G. Smith, *International handbook of organizational teamwork and cooperative working* (S. 381–399). John Wiley & Sons, Inc.

van Knippenberg, D., & Sitkin, S. B. (2013). A Critical Assessment of Charismatic—Transformational Leadership Research: Back to the Drawing Board? *The Academy of Management Annals*, *7*(1), 1–60. https://doi.org/10.1080/19416520.2013.759433

Vincent-Höper, S., Teetzen, F., Gregersen, S., & Nienhaus, A. (2017). Leadership and employee well-being. In *Research handbook on work and well-being* (S. 269–292). Edward Elgar.

Vonderlin, R., Schmidt, B., Müller, G., Biermann, M., Kleindienst, N., Bohus, M., & Lyssenko, L. (2021). Health-Oriented Leadership and Mental Health From Supervisor and Employee Perspectives: A Multilevel and Multisource Approach. *Frontiers in Psychology*, *11*, 614803. https://doi.org/10.3389/fpsyg.2020.614803

Warr, P. (1990). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology*, *63*, 193–210.

Wegge, J., Shemla, M., & Haslam, S. A. (2014). Leader Behavior as a Determinant of Health at Work: Specification and Evidence of Five Key Pathways. *German Journal of Human Resource Management*, *28*(1–2), 6–23. https://doi.org/10.1177/239700221402800102

Westman, M. (2001). Stress and Strain Crossover. *Human Relations*, *54*(6), 717–751.

Wright, T. A., Emich, K. J., & Klotz, D. (2017). The many „faces“ of well-being. In R. J. Burke & K. M. Page (Hrsg.), *Work and Well-Being* (S. 37–58). Edward Elgar Publishing.

Yulita, Dollard, M. F., & Idris, M. A. (2017). Climate congruence: How espoused psychosocial safety climate and enacted managerial support affect emotional exhaustion and work engagement. *Safety Science*, *96*, 132–142. https://doi.org/10.1016/j.ssci.2017.03.023

Zohar, D., & Luria, G. (2005). A Multilevel Model of Safety Climate: Cross-Level Relationships Between Organization and Group-Level Climates. *Journal of Applied Psychology*, *90*(4), 616–628. https://doi.org/10.1037/0021-9010.90.4.616

Zweber, Z. M., Henning, R. A., & Magley, V. J. (2016). A practical scale for Multi-Faceted Organizational Health Climate Assessment. *Journal of Occupational Health Psychology*, *21*(2), 250–259. https://doi.org/10.1037/a0039895

Zweber, Z. M., Henning, R. A., Magley, V. J., & Faghri, P. (2015). Considering the Differential Impact of Three Facets of Organizational Health Climate on Employees' Well-Being. *The Scientific World Journal*, *2015*, 1–10. https://doi.org/10.1155/2015/407232

Appendix

7.1 Declarations

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FAKULTÄT
FÜR PSYCHOLOGIE UND
BEWEGUNGSWISSENSCHAFT
Institut für Bewegungswissenschaft
Institut für Psychologie

Eidesstattliche Erklärung nach *(bitte Zutreffendes ankreuzen)*

☐ **§ 7 (4) der Promotionsordnung des Instituts für Bewegungswissenschaft der Universität Hamburg vom 18.08.2010**

☒ **§ 9 (1c und 1d) der Promotionsordnung des Instituts für Psychologie der Universität Hamburg vom 20.08.2003**

Hiermit erkläre ich an Eides statt,

1. dass die von mir vorgelegte Dissertation nicht Gegenstand eines anderen Prüfungsverfahrens gewesen oder in einem solchen Verfahren als ungenügend beurteilt worden ist.
2. dass ich die von mir vorgelegte Dissertation selbst verfasst, keine anderen als die angegebenen Quellen und Hilfsmittel benutzt und keine kommerzielle Promotionsberatung in Anspruch genommen habe. Die wörtlich oder inhaltlich übernommenen Stellen habe ich als solche kenntlich gemacht.

Tornesch, 5.4.23
Ort, Datum

F. Teuken
Unterschrift

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Studien- und Prüfungsbüro Psychologie • Fakultät PB • Universität Hamburg • Von-Melle-Park 5 • 20146 Hamburg
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Institut für Bewegungswissenschaft
Institut für Psychologie

Erklärung gemäß *(bitte Zutreffendes ankreuzen)*

☐ **§ 4 (1c) der Promotionsordnung des Instituts für Bewegungswissenschaft der Universität Hamburg vom 18.08.2010**

☒ **§ 5 (4d) der Promotionsordnung des Instituts für Psychologie der Universität Hamburg vom 20.08.2003**

Hiermit erkläre ich,

Friederike Teeken (Vorname, Nachname),

dass ich mich an einer anderen Universität oder Fakultät noch keiner Doktorprüfung unterzogen oder mich um Zulassung zu einer Doktorprüfung bemüht habe.

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Unterschrift

Studien- und Prüfungsbüro Bewegungswissenschaft • Fakultät PB • Universität Hamburg • Mollerstraße 10 • 20148 Hamburg
Studien- und Prüfungsbüro Psychologie • Fakultät PB • Universität Hamburg • Von-Melle-Park 5 • 20146 Hamburg
www.pb.uni-hamburg.de