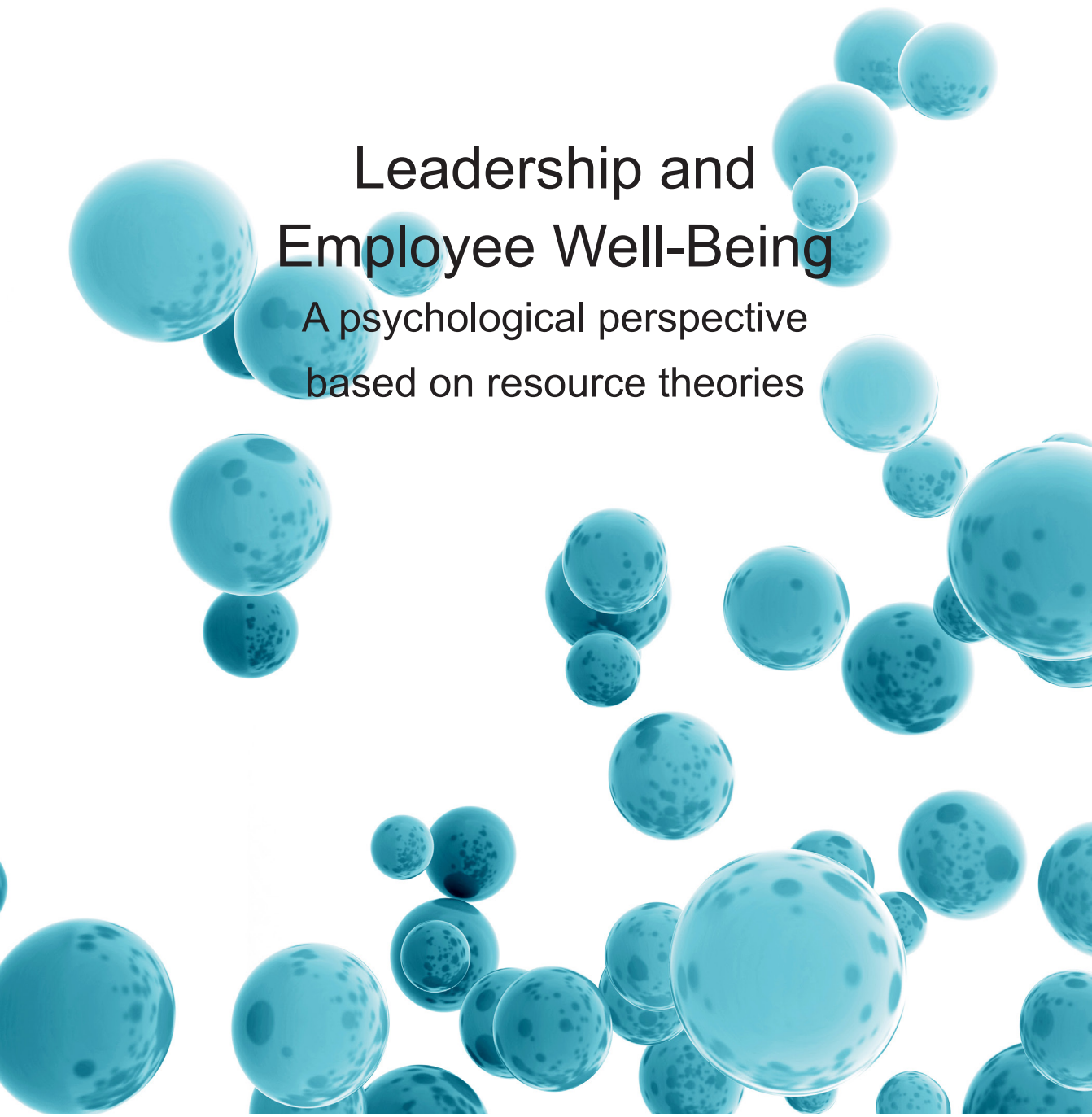


KAISA PERKO

# Leadership and Employee Well-Being

A psychological perspective  
based on resource theories





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ACADEMIC DISSERTATION

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KAISA PERKO

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Tampere, May 2017

Kaisa Perko

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# ABSTRACT

This study focused on the role of leadership, as perceived by employees, in employee well-being. In all the four articles of this thesis, constructive leadership was conceived as a job resource for employees in accordance with the Job Demands-Resources model (Bakker & Demerouti, 2007), which elaborates the principles of the Conservation of Resources theory (Hobfoll 1989, 2001) in the occupational context. The COR theory emphasizes the availability of resourceful factors in shielding well-being, particularly in times when important resources are lost, threatened, or not regained after investment. The present study extended the literature on leadership and employee well-being particularly by setting specific leadership styles (transformational and authentic) in the context of other leadership behaviours (supervisor fairness, abusive supervision, and conflict management). Furthermore, with an aim to yield results that are better interpretable at the level of the individual, leadership and employee well-being were investigated longitudinally utilizing a person-centred research paradigm (Study II and IV), which compliments the variable-centred approach (Study I and III) in an important way. In the person-centred approach, the focus was on the differences in leadership between individuals who demonstrated different profiles of across-time development in occupational well-being (vigour and exhaustion in Study II) or in work-related rumination (in Study IV; referring to recurrent and persistent thoughts about work-related problems during off-job time).

The questionnaire data used in this study were gathered among Finnish municipal employees 2011–2013 ( $N_{\text{Time1}} = 557$ ,  $N_{\text{Time2}} = 333$ ,  $N_{\text{Time3}} = 294$ ), mostly women (85%), from various occupations. Concerning leadership, the study participants were asked to rate their immediate superior. Cross-sectional data were used in Study I ( $N = 557$ ) and Study III ( $N = 333$ ), whereas in Study II, two-wave longitudinal data with 14 months' time-lag ( $N = 262$ ), and in Study IV, three-wave longitudinal (incomplete) data across 22 months (total  $N = 625$ ) were used. In the person-centred longitudinal studies (Study II and IV), latent classes (not pre-defined subgroups) of participants with similar profiles of occupational well-being or work-related rumination were identified.

The main results of this study indicated that, first, leadership behaviours can decrease employees' risk for developing depressive symptoms by enhancing employees' personal resources, referring to aspects of the self that are linked to resiliency. Specifically, the results supported the mediating role of occupational self-efficacy, meaningfulness of the work, and (lack of) work-related rumination in the relationship between transformational leadership and depressive symptoms (Study I). Second, the results based on the person-centred longitudinal approach revealed that leadership and employee well-being demonstrated congruence that pertained both to differences between persons and changes within persons (Study II and IV). Thus, participants reporting better well-being also consistently reported more favourable leadership behaviours, and when occupational well-being improved or deteriorated, leadership perceptions changed in a similar way. Congruent changes were found particularly for transformational leadership and employee energy (vigour). The results on congruence were interpreted both from a leader-centric and a follower-centric view. According to the leader-centric view, leader behaviours operate on employee well-being as job resources, whereas the follower-centric view emphasizes the role of followers' mindset and affect when rating their leaders.

From a leader-centric view, highest levels of work-related rumination (Study IV) and exhaustion were reported by participants who had high job demands (quantitative, cognitive, and emotional) but lacked the buffering resources of leadership. The participants in the higher classes of work-related rumination reported especially lower supervisor fairness and higher abusive supervision, both indicating disrespectful treatment. Third, the relative contributions of transformational and fair leadership for employee work engagement and exhaustion were examined (Study III). The results indicated no additive effects of transformational leadership, i.e., fair leadership explained work engagement equally well. In addition, fair leadership was found to be more important to prevent employee well-being from deteriorating (exhaustion). Moreover, this study showed that 21%–32% of the variation in leadership ratings was explained by employees rating the same leader, while well-being (work-engagement and exhaustion) was found to vary only from one individual to another, and not between work units.

Overall, the results of this study emphasize the role of justice behaviours of supervisors (respectful and equal treatment) in sustaining employee well-being. Unfair treatment and abusive behaviours constitute a stressor and a risk factor for employee exhaustion. Furthermore, the results suggested that leadership and employee well-being are intertwined in a way that calls for an understanding of the affective factors involved in relationships between leaders and employees. This view

is further supported by the notably high empirical overlap (high correlations) between leadership measures. In order to avoid overstated claims on the effects of transformational leadership on employee well-being, transformational leadership should be evaluated in the context of other leadership behaviours, especially when it concerns supervisory leadership in organizations. To conclude, leaders can importantly support and enhance employees' well-being. However, based on the results of this study, they are limited to the influence in dyadic relationships since the risk for impairment of psychological well-being among employees is individual and not shared within work units.

# TIIVISTELMÄ

Väitöstutkimuksen päätavoitteena oli tutkia johtamisen merkitystä työntekijöiden hyvinvoinnille psykologisesta näkökulmasta. Tarkastelun lähtökohtana olivat työntekijöiden havainnot lähimmän esimiehensä käyttäytymisen piirteistä eli lähijohtaminen siten kuin työntekijät sen kokevat. Kaikissa väitöskirjan neljässä osatutkimuksessa rakentavia johtamisen piirteitä käsiteltiin työn voimavarojen ja vaatimusten mallin mukaisina työn voimavaratekijöinä (Bakker & Demerouti, 2007). Työn voimavarojen ja vaatimusten mallin voi nähdä täsmentävän ja kehittälevän yleisemmän voimavarojen säilyttämisen teorian (Hobfoll, 1989, 2001) periaatteita työhön ja työhyvinvointiin liittyen. Voimavarojen säilyttämisen teoria korostaa käytettävissä olevien voimavarojen (eli erilaisten arvostettujen resurssitekijöiden) suojaavaa vaikutusta hyvinvoinnille erityisesti silloin, kun yksilö on menettänyt tärkeitä voimavaroja, kokee voimavarojen menettämisen uhkaa tai ei ole saanut takaisin sijoittamiaan voimavaroja.

Käsillä oleva tutkimus laajensi johtamista ja työntekijöiden hyvinvointia koskevaa aiempaa tutkimusta erityisesti tarkastelemalla varsinaisia johtamistyyliä (transformationaalinen ja autenttinen) suhteessa muihin käyttäytymispiirteisiin johtamisessa (esimiehen oikeudenmukaisuus, loukkaava johtaminen, konfliktien hallinta). Lisäksi johtamista ja hyvinvointia tutkittiin pitkittäisaineistossa hyödyntäen henkilökeskeistä tutkimusotetta (Artikkelit II ja IV), mikä olennaisella tavalla täydentää muuttujakeskeistä lähestymistapaa (Artikkelit I ja III), sillä henkilökeskeisen tutkimuksen tulokset ovat paremmin tulkittavissa yksilötasolla. Henkilökeskeistä lähestymistapaa soveltaessa päähuomio oli johtamista koskevien arvioiden eroissa henkilöillä, joilla oli erilaiset työhyvinvoinnin (tarmokkuuden ja uupumusasteisen väsymyksen) profiilit seuranta-aineistossa (Artikkeli II). Vastaavalla tavalla tutkittiin johtamisen eroja työasioiden vaatimista koskevien profiilien välillä (Artikkeli IV). Työasioiden vaatimisella tarkoitettiin toistuvia, sitkeitä työn ongelmiin liittyviä ajatuksia vapaa-ajalla.

Tutkimus perustuu kyselyaineistoon, joka kerättiin suomalaisilta eri ammateissa toimivilta kunta-alan työntekijöiltä vuosina 2011–2013 ( $N_{T1} = 557$ ,  $N_{T2} = 333$ ,  $N_{T3} = 294$ ). Heitä pyydettiin arvioimaan lähimmän esimiehensä johtamiskäyttäytymistä, omaa hyvinvointiaan sekä työnsä piirteitä. Tutkittavat olivat enimmäkseen naisia (85

%). Ensimmäisessä ( $N = 557$ ) ja kolmannessa ( $N = 333$ ) osatutkimuksessa käytettiin poikkileikkausaineistoa. Toinen osatutkimus perustui 14 kuukauden pitkittäisaineistoon ( $N = 262$ ) ja neljäs osatutkimus 22 kuukauden pitkittäisaineistoon (vaillinaisen aineiston kokonais- $N = 625$ ). Näissä henkilökeskeistä lähestymistapaa soveltavissa osatutkimuksissa (Artikkelit II ja IV) seuranta-aineistosta identifioitiin latenteja eli ennalta tuntemattomia osaryhmiä tutkittavista, joilla työhyvinvoinnin tai vastaavasti työn vatvomisen kehityskulku oli keskenään samankaltaista.

Tutkimuksen päätulokset osoittivat, ensiksi, että lähijohtaminen voi vähentää työntekijöiden riskiä masennusoireiden kehittymiseen tukemalla työntekijöiden henkilökohtaisia voimavaroja, jotka viittaavat yksilön resilienssiä (psykkistä kestävyttä) työssä edistäviin ominaisuuksiin. Tutkimuksessa käsiteltiin erityisesti ammatillisen pystyvyysuskon, työn koetun merkityksellisyyden ja (vähäisen) työn vatvomisen välittävää merkitystä transformationaalisen johtamisen ja masennusoireiden välisessä yhteydessä (Artikkeli I). Toiseksi henkilökeskeiseen tutkimusotteeseen perustuvat tulokset paljastivat lähijohtamisen ja työntekijöiden hyvinvoinnin välillä yhdenmukaista vaihtelua, joka koski sekä tutkittavien välisiä eroja että muutoksia tutkittavien yksilöllisessä tasossa (Artikkelit II ja IV). Toisin sanoen, tutkittavat, joilla oli suotuisampi hyvinvoinnin taso, raportoivat myös suotuisampaa johtamista, ja hyvinvoinnin parantuessa tai heikentyessä myös johtamisarviot muuttuivat vastaavalla tavalla. Erityisen yhdenmukaisesti vaihtelivat transformationaalinen johtaminen ja työntekijän energisuus (tarmokkuus). Johtajan käyttäytymispiirteisiin keskittyvän johtajakeskeisen lähestymistavan lisäksi tuloksia tulkittiin työntekijäkeskeisestä näkökulmasta, joka korostaa arvioitsijan mielessä tapahtuvien asioiden ja affektiivisen hyvinvoinnin merkitystä johtamista koskevassa arvioinnissa.

Johtajakeskeisestä näkökulmasta on huomattava, että eniten työn vatvomista ja uupumusasteista väsymystä esiintyi tutkittavilla, joilla oli korkeat työn vaatimukset (määrälliset, emotionaaliset ja kognitiiviset vaatimukset), mutta joilta puuttui lähijohtamiseen liittyvät, suojaavat voimavaratekijät. Tutkittavat, jotka sijoittuivat eniten työn vatvomista osoittavaan aineiston osaryhmään, raportoivat vähemmän erityisesti esimiehen oikeudenmukaisuutta ja enemmän loukkaavaa johtamista kuin muut tutkittavat. Sekä puutteet oikeudenmukaisuudessa että loukkaava johtaminen viittaavat epäkunnioittavaan kohteluun. Kolmanneksi tutkimuksessa analysoitiin transformationaalisen ja oikeudenmukaisen johtamisen suhteellista selitysvoimaa työntekijöiden työn imun ja uupumusasteisen väsymyksen selittämisessä (Artikkeli III). Tulokset osoittivat, ettei transformationaalisella johtamisella ollut

oikeudenmukaiseen johtamiseen nähden suurempaa selitysvoimaa. Näin ollen oikeudenmukainen johtaminen selitti työn imua yhtä hyvin kuin transformationaalinen johtaminen. Lisäksi oikeudenmukaisen johtamisen havaittiin olevan transformationaalista tärkeämpää työntekijän hyvinvoinnin heikkenemisen eli uupumusasteisen väsymyksen ehkäisyssä. Tutkimus osoitti myös, että 21–32 % johtamisarvioiden vaihtelusta selittyi sillä, että työntekijät arvioivat samaa esimiestä. Toisin kuin johtamisarvioissa, työhyvinvoinnissa (työn imu ja uupumusasteinen väsymys) ei kuitenkaan ollut vaihtelua työyksiköiden välillä, eli työhyvinvointi vaihteli vain yksilöstä toiseen.

Kaikkiaan tutkimuksen tulokset korostavat esimiehen oikeudenmukaisuuden (kunnioittava ja puolueeton, tasapuolinen kohtelu) merkitystä työntekijöiden hyvinvoinnin ylläpitämisessä. Epäoikeudenmukainen kohtelu ja loukkaava johtaminen muodostavat stressitekijän ja riskin työntekijän uupumukselle. Lisäksi tulokset osoittivat johtamisarvioiden ja hyvinvoinnin olevan yhteen kietoutuneita tavalla, joka herättää tarpeen kasvattaa ymmärrystä affektiivisten tekijöiden merkityksestä esimiesten ja työntekijöiden välisissä suhteissa. Tätä näkemystä tukee myös johtamiskäsitteiden empiirinen päällekkäisyys (korkeat mittareiden väliset korrelaatiot). Jotta transformationaalisen johtamisen hyvinvointivaikutuksia ei ylikorostettaisi, sitä tulisi arvioida suhteessa muihin johtamiskäyttäytymisen piirteisiin, erityisesti jos kyseessä on organisaatioissa tapahtuva esimiestyö. Johtopäätöksenä voidaan todeta, että lähijohtamisen piirteet voivat merkittäväällä tavalla tukea ja edistää työntekijöiden hyvinvointia. Tämän tutkimuksen tulosten perusteella lähijohtamisen vaikutus rajautuu kuitenkin kahdenvälisiin suhteisiin, sillä riski hyvinvoinnin heikkenemiseen on yksilöllinen eikä saman työyksikön työntekijöiden kesken jaettu ilmiö.



# LIST OF ORIGINAL PUBLICATIONS

- I Perko, K., Kinnunen, U., & Feldt, T. (2014). Transformational leadership and depressive symptoms among employees: Mediating factors. *Leadership & Organization Development Journal*, 35(4), 286–304. doi:10.1108/LODJ-07-2012-0082
- II 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. doi:10.1080/1359432X.2015.1011136
- III Perko, K., Kinnunen, U., Tolvanen, A., & Feldt, T. (2016). Back to basics: The relative importance of transformational and fair leadership for employee work engagement and exhaustion. *Scandinavian Journal of Work and Organizational Psychology*, 1(1): 6, 1–15. doi:10.16993/sjwop.8
- IV Perko, K., Kinnunen, U., & Feldt, T. (2017). Long-term profiles of work-related rumination associated with leadership, job demands, and exhaustion: A three-wave study. *Work & Stress*, Taylor & Francis Online 30 May 2017. doi:10.1080/02678373.2017.1330835



# 1 INTRODUCTION

## 1.1 Background and purpose

The role of supervisors in employee well-being has attracted growing attention both in academic research and popular media since the turn of the 21st century. In the context of the contemporary working life with increasing demands on productivity, leadership has been seen as a tool to enhance motivation and well-being as well to manage the risks related to impaired health and well-being among employees. Several reviews on the topic have been published, documenting an association between supervisor behaviours and employee well-being, referring to, for example, supporting, empowering, and considerate behaviour (Donaldson-Feilder, Munir, & Lewis, 2013; Kuoppala et al., 2008; Skakon, Nielsen, Borg, & Guzman, 2010). From an epidemiological point of view, it is notable that similar associations have been reported in the European Working Conditions Survey 2010, based on data from the EU-28 countries (Montano, 2016). Despite the established association, from a scientific perspective, the role of leadership in employee well-being is yet far from well understood. In order to develop an in-depth understanding of the relationship between leadership and employee well-being, a larger variety of methodological approaches should be used, and the role of employees in forming and rating leadership should be taken seriously (e.g. Hansbrough, Lord, & Schyns, 2015).

The overall purpose of this study was to shed light on the relationship between leadership and employee well-being from a psychological perspective. This work expands the existing knowledge in three main ways. First, in addition to the traditional variable-oriented approach, we investigated leadership and employee well-being from a person-centred approach by focusing on the patterns of typical development across time (Bergman & Lundh, 2015; Bergman, Magnusson, & El-Khoury, 2003; Bergman & Trost, 2006). With this approach, individual differences in the level and development of well-being among employees were explicitly acknowledged, and leadership was examined within and between subgroups of employees that showed similar patterns of well-being over time. Second, several leadership concepts were examined in the present study, which enabled comparisons between the concepts in relation to employee well-being. Third, the present work

was among the first to concern a link between leadership studies and research on recovery from work stress, as it additionally examined the role of leaders in how easy or difficult it is for employees to switch off from work-related problems during off-job time.

Concerning leadership concepts, transformational, authentic, fair, and abusive leadership and conflict management were examined in this work, in relation to employee well-being. Transformational leadership, the most studied example of the neo-charismatic or heroic models on leadership (Alimo-Metcalfe, 2013; House & Aditya, 1997), dominates the current studies on leadership, including those conducted in relation to employee well-being. Instead, research on post-heroic concepts with respect to employee well-being, such as the impact of authentic leadership, is still scarce. In contrast to particular leadership styles, supervisor fairness (or fair leadership), abusive supervision, and conflict management refer to more elementary and general behaviours of supervisors that are potentially relevant, or detrimental in case of abusive supervision and unfairness, for employee well-being across various contexts. Literature on supervisor fairness (justice behaviours of supervisors) derives from the organizational justice research, within which employee health and well-being outcomes have been quite extensively examined (see Greenberg, 2010; Robbins, Ford, & Tetrick, 2012, for reviews). Throughout the present work, constructive forms of leadership were essentially considered as resources for employees in accordance with the Job Demands-Resources model (Bakker & Demerouti, 2007), whereas unconstructive forms of leadership were conceptualized as job demands.

This introductory chapter presents the resource theories that this study drew on, and explains how leadership and employee well-being are embedded within them. Subsequently, I introduce the concepts of leadership and well-being that were used in this work. In that section I also concisely present background for the connection between each leadership concept and employee well-being from earlier studies. Next, I review previous longitudinal studies more closely and give an emphasis on their design and analytical choices. After discoursing the type of information that employee perceptions of leadership are, and having introduced the holistic person-centred research strategy, I move on to address the gaps in earlier research and the contributions of the present study. Following the introduction, I articulate the aims of the current study.

## 1.2 Leadership and employee well-being in the framework of resource theories

### 1.2.1 Leadership in the context of the Job Demands-Resources model

The Job Demands-Resources (JD-R) model is predicated on the assumption that while every occupation has its own characteristics that are relevant for occupational health, characteristics of the work across occupations can be divided in two broad categories; job demands and job resources. In this regard, it is important to note that job demands and job resources comprise not only task-level work characteristics but also social and organizational factors that influence well-being. In other words, the JD-R model refers to job resources as all those ‘physical, psychological, social, or organizational aspects of the job that are either functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, or stimulate personal growth, learning, and development’ (Bakker & Demerouti, 2007, p. 312).

Consistent with this definition, in the current study, transformational, authentic, and fair leadership as well as conflict management were considered as job resources for an employee. Considering leadership as an influential social and organizational aspect of the job, these forms of leadership are considered to motivate employees externally by facilitating goal attainment, or to foster intrinsic motivation by stimulating personal growth, learning, and development. As regards the role of intrinsic motivation, job resources in the JD-R model fulfil basic human needs such as the need for autonomy, relatedness, and competence as presented by the Self-Determination theory of motivation (Ryan & Deci, 2000). Leadership can be conceived to either facilitate or hinder the motivational potential related to these basic needs, and thereby, it plays an integral part in motivation and well-being among employees.

Job demands, in turn, are defined as all those ‘physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs’ (Bakker & Demerouti, 2007, p. 312). In this study, abusive supervision and unfair leadership were considered as job demands because coping with these forms of leadership requires additional effort from the employee and it is expected to result in psychological costs and energy drain.

Concerning job demands, an important refinement to the JD-R model has been presented that pertains to a distinction between challenge demands and hindrance demands (Crawford, LePine, & Rich, 2010; Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). For this distinction, expectancy of future gains is important (Crawford et al., 2010; LePine, Podsakoff, & LePine, 2005). While challenge demands potentially promote learning, mastery, personal growth, and future gains, investing effort in hindrance demands does not pay off. Instead, hindrance demands have the potential to thwart personal growth, learning, and goal attainment. Hindrance demands include, for example, role conflict, role overload, and administrative hassles. It is important to note that challenge demands seem to contribute to both positive well-being (work engagement) and health impairment (burnout). Hindrance demands, in contrast, exert only a detrimental influence; they contribute not only to increased burnout but also to decreased work engagement (Crawford et al., 2010). Related to well-being, challenge demands trigger positive emotions and active, problem-focused coping styles, while hindrance demands activate negative emotions and provoke passive, emotion-focused coping styles (Crawford et al., 2010).

The distinction between challenge demands and hindrance demands appears to be applicable to the study of leadership as well. In this context, an example of challenge demands may be the high performance expectations of supervisors. However, there are also unfavourable forms of leadership, some of which are unfavourable in such an evident way that they can be distinguished as hindrance demands for the subordinates. In the present work, abusive supervision and unfair leadership were essentially considered as hindrance demands; they provide no rewarding experiences despite the psychological effort invested in coping with them.

## 1.2.2 The paths of health impairment and motivation in the JD-R model

Concerning well-being, the JD-R model proposes two distinct processes: job demands contribute to strain, while job resources enhance motivation (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). More specifically, in the motivational process job resources foster the motivational aspect of well-being, work engagement. The health impairment process is characterized by energy depletion: high job demands exhaust employees' mental and physical resources, thereby leading to strain reactions such as occupational burnout (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Strain reactions, in turn, are further posited to lead to negative

organizational outcomes such as higher turnover intentions, whereas on the positive side, work engagement is expected to enhance organizational commitment.

According to the JD-R model, the extent to which job demands are negative or unfavourable for employee well-being depends crucially on the role of recovery (Bakker & Demerouti, 2007). In this respect, the JD-R model relies on the Effort-Recovery model (Meijman & Mulder, 1998). Job demands turn into stressors if the employee has not properly recovered from previous high effort, in other words, when there is a mismatch between the actual state and the required state of an individual (Meijman & Mulder, 1998). This is where the strain process of the JD-R model begins. In this regard, the JD-R model draws on Hockey's (1997) Compensatory Regulatory model that addresses the cost-benefit decisions when people work under stress and attempt to protect their performance level while limiting the energy costs involved. In order to maintain the preferred performance level, increased subjective effort (compensatory effort) is needed. Keeping the performance level in this situation, however, results in behavioural and physiological costs (compensatory costs) that are unhealthy if the situation continues.

Considering the way the JD-R model presents the unfavourable nature of job demands being dependent on the role of sufficient recovery, the relevance of distinguishing challenge demands and hindrance demands becomes even more salient. Arguably, hindrance demands are job demands that are stressful independent of the level of recovery. For example, role ambiguity, organizational hassles, or unfair supervisor behaviours conceivably evoke stress reactions even if the employee has recovered sufficiently. Challenge demands, instead, may turn into stressors in the way described in the JD-R model, that is, in a situation of insufficient recovery and a related discrepancy of the actual state in relation to the required state of the individual.

Concerning job resources and the motivational path, on a general level, the JD-R model refers to the Conservation of Resources (COR) theory (Hobfoll, 1989, 2001). According to the COR theory, people are inherently motivated to obtain, protect, and foster resources, that is, the things that they value (Hobfoll, 2001). Resources, in the general sense, as well as job resources in the JD-R model, may be valued in their own right or because they have instrumental value in serving further resource gain (Hobfoll, 2001). More specifically, the JD-R model posits that job resources foster both intrinsic and extrinsic motivation. With regard to intrinsic motivation, as stated, job resources fulfil the basic human needs of autonomy, competence, and relatedness (Ryan & Deci, 2000). Regarding extrinsic motivation on goal attainment, the JD-R model draws on the Effort-Recovery model (Meijman

& Mulder, 1998). Although the conceptual framework presented by Meijman and Mulder (1998) primarily focuses on workload in both mental and physical terms, they additionally pay attention to work situation factors that affect employees' willingness to spend capacity and exert required effort.

These two distinct processes of health impairment and motivation depict main effects of job demands and job resources. In addition to the main effects, the JD-R model proposes that the combination of demands and resources is crucial for strain and motivation to develop. Particularly the buffering role of job resources for the unhealthy effects of high job demands has been theoretically and empirically addressed in terms of the JD-R model (Bakker & Demerouti, 2007).

The JD-R model has become influential among work psychologists after the introduction of the early version of the model in the beginning of the twenty-first century (Bakker & Demerouti, 2016; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Importantly, by involving the motivational path, the JD-R model highlights that good occupational well-being is more than a mere lack of strain symptoms. As noted by Schaufeli, Bakker and van Rhenen (2009), the JD-R model integrates the traditional strain-focused view on employee well-being with a motivational view, and thereby contributes to bridging the gap between occupational health management and human resources management. Combining the perspectives of occupational health and human resources management is particularly essential for the study of leadership. Leadership has long been acknowledged to influence employee motivation and performance in addition to the more recent focus on leadership's impact on strain and well-being. Taken together, the JD-R model serves the current study well because it is useful in integrating the favourable and unfavourable aspects of leadership with the positive and negative aspects of well-being.

### 1.2.3 Work characteristics as job demands and resources

At the core of work and organizational psychology lies the assumption that psychosocial work characteristics influence employees' well-being and health. Accordingly, several models on work stress, and on motivation, have dealt with characteristics of the work, referring to job or task level attributes (e.g. Bakker & Demerouti, 2007; Morgeson & Humphrey, 2006). In an attempt to put the relationship of leadership to employee well-being into perspective, the current study additionally examined the role of work characteristics in employee well-being. In statistical terms, this is necessary to avoid the omitted variable bias (Kline, 2011).



Among the work characteristics included in this study, workload, autonomy, and role clarity are well-established, widely investigated concepts, whereas cognitive and emotional demands provide somewhat newer insight into the study of work characteristics.

Specifically, workload, cognitive demands, and emotional demands are aspects of the job that require effort, and are therefore defined as job demands in accordance with the JD-R model (Bakker & Demerouti, 2007). Workload refers to the amount of work that has to be completed in a certain time frame, thereby denoting the pace and volume of working (Spector & Jex, 1998). While workload pertains to a quantitative aspect of job demands, emotional and cognitive demands represent the qualitative aspects of demands. Cognitive demands refer to information processing, such as remembering and making complex decisions (Pejtersen, Kristensen, Borg, & Bjorner, 2010; Zapf, Semmer, & Johnson, 2014). Cognitive demands can be considered challenge demands because information processing enriches work and enhances motivation (Morgeson & Humphrey, 2006; Van den Broeck et al., 2010), but may also result in fatigue and exhaustion (Van den Broeck et al., 2010; Zapf et al., 2014). Additionally, workload is typically seen as a challenge demand (Crawford et al., 2010; Van den Broeck et al., 2010), although a lack of associations with positive well-being (components of work engagement) can occasionally be noted (Schaufeli & Bakker, 2004; Halbesleben, 2010). Instead, the relationship between workload and exhaustion or burnout is well-established (for reviews, see Schaufeli & Buunk, 1996; Lee & Ashforth, 1996).

Further, among the qualitative job demands, emotional demands refer to the emotionally demanding aspects of a job, for example, facing emotionally difficult situations or relating to other people's personal problems as part of the job (Pejtersen et al., 2010; Zapf et al., 2014). While emotional demands involve many facets with potentially different effects on well-being (Zapf et al., 2014), one study found that emotional demands shared more properties of hindrance demands rather than of challenges demands (Van den Broeck et al., 2010).

Concerning job resources, autonomy and role clarity were examined in this study. Among work characteristics, autonomy is perhaps the one most widely studied and has an established position in motivational work design approaches (Morgeson & Humphrey, 2006). Generally, autonomy refers to freedom and independence in one's work with regard to, for example, scheduling one's work, making decisions and choosing work methods (Morgeson & Humphrey, 2006). Autonomy is close to the concept of job control in the influential Job-Demand Control model (Karasek, 1979). In that theory, however, job control refers not only to freedom to make

independent decisions (decision authority), but also to the possibility to use and develop a variety of skills at work (skill discretion). This combination is posited to protect well-being when job demands are high.

Positive relationships between autonomy and work engagement have been documented in at least two meta-analyses (Crawford et al., 2010; Halbesleben, 2010). Lack of autonomy seems to contribute to burnout (Schaufeli & Buunk, 1996), but not unequivocally. For example, the negative relationships between autonomy and burnout dimensions were not significant in a meta-analysis conducted by Lee and Ashforth (1996). Role clarity, in turn, describes the extent to which employees perceive clarity of expectations with regard to their work role and responsibilities (Pejtersen et al., 2010). A large body of meta-analytic literature has demonstrated that the opposite of role clarity, role ambiguity, and other role problems increase burnout, particularly the exhaustion component (Lee & Ashforth, 1996; Örtqvist & Wincent, 2006; Schaufeli & Buunk, 1996; Zapf et al., 2014). As hindrance demands, they also decrease work engagement (Crawford et al., 2010).

To sum up, a set of work characteristics conceptualized as job demands and resources were examined in this study. The main purpose of the inclusion of work characteristics was to set the magnitude of leadership effects in relation with established job-level factors that are known to impact employee well-being.

#### 1.2.4 The Conservation of Resources theory

Besides the JD-R model, the current study drew from the Conservation of Resources (COR) theory (Hobfoll, 1989). The COR theory is a general stress theory according to which resource loss is the primary mechanism driving psychological stress reactions (Hobfoll, 1989, 2001). Resources refer to objects, personal characteristics, conditions, and energies that are valued in their own right or because of their instrumental value in gaining other resources. According to the basic tenet of the theory, people strive to retain, protect, and build resources, and they are threatened by the potential or actual loss of the resources (Hobfoll, 1989). Except for reacting to the potential or actual resource loss, a lack of resource gain after investment of resources also results in stress reactions.

A central principle of the COR theory is that both resource gains and resource losses tend to accumulate in spirals or cycles. In the context of loss, loss cycles develop because individuals without access to appropriate resources are more vulnerable to increased resource loss as they lack the resources to offset further

losses (Hobfoll, 1989, 2001). Thus, although resource loss is the primary operating mechanism in psychological stress and has a significantly greater impact than resource gain does, resource gain shows its saliency and plays a crucial role in times of loss (Hobfoll, 2001). Additionally, resources aggregate in resource caravans as individuals with strong resource pools can invest their resources for further gains and for protection against resource loss (Hobfoll, 2001).

In fact, the JD-R model is considered to apply the principles of the more general COR theory in the context of work and well-being (Bakker & Demerouti, 2007; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008). Specifically, the paths of health impairment and motivation can be viewed as chains of resource loss and resource gain within the framework of the COR theory. Additionally, the crucial role of job resources in situations when job demands are high derives explicitly from the COR theory (Bakker & Demerouti, 2007). The COR theory has been frequently used in research on occupational well-being, particularly in regard to the study on exhaustion, which is accordingly conceptualized as the depletion of energy resources (Lee & Ashforth, 1996; Halbesleben, 2010; Zijlstra, Cropley, & Rydstedt, 2014).

In the current study, the COR theory was specifically used to conceptualize energy, as implied by occupational well-being, as a necessary resource in work setting that is invested in efforts at work and regained in a recovery process after work hours (e.g. Meijman & Mulder, 1998; Zijlstra et al., 2014). Furthermore, the COR theory was utilized to understand the primacy of resource loss in stress reactions and how the resources of an individual may link to other resources in a net-like character (Hobfoll, 2001).

## 1.3 Leadership concepts defined

This section introduces the leadership concepts that were examined in this work. I introduce the theoretical background of each concept and briefly describe the relationships to employee well-being that have been found in previous studies.

### 1.3.1 Transformational leadership

The concept of transformational leadership originates from the work by James MacGregor Burns (1978) on influential political leaders. In his work, transformational leaders were defined as those who offer people a purpose that

serves their higher-order needs and that they are therefore intrinsically motivated to follow. In the context of organizational leadership, the transformational leadership theory was further developed particularly by Bernard M. Bass (1985). In this context, transformational leaders raise their followers' commitment to organizational goals and make them attain higher levels of performance than those initially expected. Originally Burns (1978), and later Bass (1985), contrasted transformational leadership with transactional leadership. Whereas transactional leadership is based on an exchange process between a leader and a follower and is characterized by the monitoring, controlling, and rewarding actions of the leader, transformational leaders use emotional, symbolic, and value-related ways of influencing instead of exchanges that are ultimately based on self-interest (Bass, 1999). Several variants of the transformational leadership theory have been proposed throughout the years, and concepts such as visionary, charismatic and inspirational leadership are proposed to be closely related to transformational leadership (Bryman, 1992; Judge & Piccolo, 2004; Yukl, 1989; Yukl, 1999). These models can be jointly entitled as the neo-charismatic models of leadership (Alimo-Metcalf, 2013; House & Aditya, 1997).

Transformational leadership is defined in terms of the leader behaviours and their effect on followers (Yukl, 1999). The ways of influencing are most typically summarized as idealized influence (charisma), inspirational motivation, intellectual stimulation, and individualized consideration (Bass, 1999, Judge & Piccolo, 2004; Podsakoff, MacKenzie, Moorman, & Fetter, 1990). Idealized influence refers to the charismatic component of transformational leadership, that is, leaders being influential about ideals or setting an admirable example to follow. Inspirational motivation involves conveying an appealing vision of the future, optimism toward goal attainment, and challenging followers with high standards. Intellectual stimulation is the degree to which the leader encourages the re-examination of assumptions and takes new approaches to old situations, thereby facilitating creativity among followers. Individual consideration is displayed when leaders respond to the needs of the followers and support their development individually.

Taken together, the transformational leadership theory has had a substantial impact on leadership research during the past 30 years (e.g. Hunt, 1999; Judge & Piccolo, 2004). Transformational leadership has been extensively examined in relation to a wide range of employee outcomes. Several meta-analyses have shown, for example, that transformational leadership enhances employee performance (Wang, Oh, Courtright, & Colbert, 2011). Studies relating transformational leadership to increased employee well-being started to emerge later than the studies

on performance, that is, particularly since the turn of the twenty-first century (for reviews, see Arnold & Connelly, 2013; Skakon et al., 2010).

Transformational leadership was examined in Studies I – IV in the present work.

### 1.3.2 Supervisor fairness

Justice or fairness is of fundamental value in organizational life and in social relations in general (e.g. Kivimäki et al., 2005). Fairness of organizational authorities, such as supervisors, has been examined in the organizational justice literature. Originally, organizational justice research focused on more systemic or institutionalized aspects of justice instead of justice of immediate supervisors (van Knippenberg, De Cremer, & van Knippenberg, 2007). As van Knippenberg et al. (2007) noted, research on the effectiveness of leadership in mobilizing and motivating followers has ‘paid less attention to the role of leader fairness than probably it should have’ (p. 113). The same shortage can be stated about research on leadership in relation to employee well-being. More recently, however, this has started to change. To date, there is also meta-analytic evidence demonstrating the importance of fairness of supervisors with regard to multiple employee and organizational outcomes (see Colquitt et al., 2013, for a review), including employee health and well-being (Ford & Huang, 2014; see Greenberg, 2010, and Ndjaboué, Brisson, & Vézina, 2012, for reviews, and Robbins et al., 2012, for a meta-analysis).

In organizational justice research, four dimensions of justice have been distinguished (Colquitt et al., 2001). The most commonly studied ones are distributive and procedural justice (Colquitt et al., 2001; Robbins et al., 2012), which can be viewed as the basic dimensions (Ford & Huang, 2014). Distributive justice refers to distribution of resources and is thereby related to perceived fairness of the outcomes of organizational processes and decisions (Colquitt, 2001; Ford & Huang, 2014). Procedural justice, in turn, is defined as perceived fairness of the formal processes and policies that lead to decision outcomes, such as the extent to which the procedures are applied consistently and without bias (Colquitt, 2001; Ford & Huang, 2014). Later development in the field introduced the concept of interactional justice, which consists of aspects of interpersonal or relational justice (respect in treatment), and informational justice (giving rationale for decisions) (Colquitt, 2001). Hence, the interactional component of organizational justice, in particular, concerns interaction between supervisors and their subordinates (Robbins et al., 2012). In support for the role of supervisors in employee well-being, the meta-analytic study

by Robbins et al. (2012) indicated that burnout and stress were predicted by interactional injustice above procedural injustice.

Until recently, interactional fairness has appeared the most salient link between organizational justice research and leadership research, both of which have addressed the effects on employee well-being (Ndjaboué et al., 2012; Robbins et al., 2012). The comprehensive meta-analysis by Colquitt et al. (2013) revealed, however, that even other forms of justice have been examined with reference to a supervisor as the source of justice. The results of this meta-analysis emphasized particularly supervisors' role in employees' justice experiences, as the relationships to a variety of outcomes turned out to be stronger with the focus on supervisors than with the focus on an organization as a whole.

Of relevance to the current study focusing on employee well-being, organizational justice has an established position in more medically oriented research on work-related health, whereby injustice or unfairness is understood as a major stressor at work (Elovainio et al., 2013; Greenberg, 2010; Ndjaboué et al., 2012). Specifically, the interpersonal aspect of justice, albeit often broadly operationalized, has been shown to constitute a risk factor for cardiovascular health (Elovainio et al., 2006; Kivimäki et al., 2005; Wager, Fieldman, & Hussey, 2003), psychiatric morbidity (psychological distress), and sickness absences (Elovainio et al., 2013; Ferrie et al., 2006; Kivimäki et al., 2003). In sum, there is compelling evidence for the importance of fairness of immediate supervisors for the health and well-being of employees.

Supervisor fairness was examined in Study III (fair leadership) and IV in the present work.

### 1.3.3 Abusive supervision

While constructive forms of leadership dominate the field, from the perspective of occupational well-being, it is also important to explore the unfavourable forms of influence that supervisors may use when interacting with their followers. Among these destructive forms of leadership, abusive supervision is the most studied, according to the meta-analysis by Schyns and Schilling (2013). Abusive supervision is defined as subordinates' perception of a 'sustained display of hostile verbal and nonverbal behaviours, excluding physical contact' (Tepper, 2000, p. 178). Thus, abusive supervision is conceptualized as a type of aggression that is, by definition, dependent on the followers' perception. Experience of disrespectful treatment by a

supervisor requires sustained psychological effort on the part of an employee, which has psychological costs such as increased exhaustion (e.g. Wu & Hu, 2009).

Compared to other concepts of destructive leadership, abusive supervision is more strongly related to employee exhaustion and depression, lowered well-being, and negative affect (Schyns & Schilling, 2013). The organizational justice theory has been applied also in connection to abusive supervision because employees can be understood to react particularly to the unfairness in an abusive supervisor's behaviour (Mitchell & Ambrose, 2007; Tepper, 2000). Active and passive forms of abusive supervision, reflecting active and passive aggression, have been discerned by Mitchell and Ambrose (2007). While passive abusive supervision is described in terms of indifference (e.g. 'Breaks promises he/she makes'), active abusive supervision reflects wilfully hostile behaviour (e.g. 'Puts me down in front of others') (Mitchell & Ambrose, 2007; Tepper, 2000). In order to explore a clearly negative aspect of leadership, the active form of abusive supervision was included in this study.

Abusive supervision was examined in Study II and IV in the present work.

#### 1.3.4 Authentic leadership

Authentic leadership is a relatively new concept in leadership research, although the concept of authenticity, referring to being true to oneself, can be traced back to ancient Greek and is described as having deep roots in various traditions (see Gardner, Cogliser, Davis, & Dickens, 2011, for a review). According to the operationalization by Walumbwa, Avolio, Gardner, Wernsing, & Peterson (2008), authentic leadership consists of self-awareness, relational transparency, balanced processing of information, and internalized moral perspective. Regarding self-awareness, authentic leaders are cognizant of their impact on others and are self-reflective about their strengths and weaknesses (Gardner et al., 2005). Essentially, these kinds of leaders show a genuine desire to understand their own leadership (Walumbwa et al., 2008). Balanced processing of information refers to an objective way of processing information, without motivational biases, and relational transparency means presenting one's true self to others and sharing information openly (Gardner et al., 2005; Walumbwa et al., 2008). In regard to internalized moral perspective, the conduct of authentic leaders is guided by internalized self-regulation based on their personal values rather than by external forces or social expectations.

Overall, self-awareness and self-regulation can be seen as two focal aspects of authentic leadership (Gardner et al., 2005; Walumbwa et al., 2008).

Although both authentic and transformational leadership behaviours can be considered to be of motivational and affective value for followers, these leaders differ in the ways they influence followers (Walumbwa et al., 2008). Considering the most notable distinction to transformational leaders, authentic leaders are not described as charismatic or inspirational. Accordingly, authentic leadership can be categorized among the post-heroic models of leadership (Alimo-Metcalfe, 2013). In addition, authentic leaders are transparent when dealing with challenges, and they are also posited to develop their followers more toward authenticity than toward leadership (Gardner et al., 2005; Walumbwa et al., 2008). Empirically, the discriminant validity of authentic leadership with respect to transformational leadership has been demonstrated in at least two studies (Walumbwa et al., 2008; Walumbwa, Luthans, Avey, & Oke, 2011).

Despite frequently presented theoretical assumptions (e.g. Gardner et al., 2005), empirical studies investigating the extent to which authentic leadership is related to employee well-being are still scarce. Some research has, however, been conducted particularly in the field of nursing, showing that authentic leadership is related to low burnout symptoms (Laschinger & Fida, 2014; Laschinger, Wong, & Grau, 2013) and high work engagement among employees (e.g. Bamford, Wong, & Laschinger, 2013).

Authentic leadership was examined in Study II in the present work.

### 1.3.5 Conflict management

In this study, conflict management refers to the extent to which supervisors take an active role to resolve conflicts and are able to consider the interests of those involved in the situation (Vincent, 2012). Although conflict management is an essential part of supervisory leadership (e.g. Chan, Huang, & Ng, 2008), very few studies have specifically examined supervisors' conflict management in relation to employee well-being. At least two previous studies, however, clearly demonstrate the relevance of conflict management for employee strain prevention. In a large-scale study among Finnish and Swedish employees from the forest industry, the risk for several health-related outcomes and exhaustion was lower for employees who reported that conflicts at the workplace were solved in a discussing style as compared to those who reported that no attempts were made to resolve conflicts (Hyde, Jäppinen, Theorell, & Oxenstierna, 2006). The results went beyond the effect of support



received from supervisors and several other control variables. The results from a multilevel study further support the importance of collaborative and unbiased conflict resolution for employee well-being: supervisors' conflict management styles as shared perceptions within work units were found to relate to low levels of psychological distress (anxiety and depression) and sleep disturbances among employees at the group level (Way, Jimmieson, & Bordia, 2014).

Conflict management was examined in Study IV in the present work.

## 1.4 Employee well-being and recovery from work

This section presents how well-being was conceptualized in this work. In essence, occupational well-being denotes energy which is invested in efforts at work and is regained through the recovery process during off-job time. Following definitions of the concepts of well-being, I discuss the role of recovery in sustaining well-being. In the end of the section, I focus on work-related rumination that hinders recovery from work, and thereby threatens the restoration of energy.

### 1.4.1 Well-being concepts in this study

One established way to describe affective well-being is based on the circumplex model of affect (Russell, 1980; Warr, 2013). In this spatial model that is analogous to a compass, affective concepts fall in a circle along two dimensions: pleasure–displeasure on the horizontal (east–west) axis and mental activation–deactivation on the vertical (north–south) axis. Starting from the northeast quadrant, summary labels for each quadrant of the compass space are enthusiasm (high activation, positive affect), comfort (low activation, positive affect), depression (low activation, negative affect) and anxiety (high activation, negative affect). Thus, depression and enthusiasm, and comfort and anxiety can be considered as bipolar opposites.

Concerning the concepts of well-being in the current work (exhaustion, work engagement, and depressive symptoms), employee well-being was examined in both positive and negative forms with respect to the aspect of pleasure. In addition, these concepts differed in terms of their activation levels. A further point to note is that the well-being concepts investigated in this study concern syndrome well-being, essentially comprising thoughts in addition to feelings (Warr, 2013). Cognitive-affective syndromes, such as occupational burnout, refer to a variety of thoughts,

perceptions, recollections, and anticipations in addition to basic affect (Warr, 2013). With regard to the scope of the constructs used, the main focus of the present study was on job-related well-being. However, depressive symptoms were also examined, referring to more general and context-free negative experiences.

#### 1.4.1.1 Exhaustion and work engagement

In the current study, occupational well-being is essentially regarded as energy and thereby a resource, consistent with the COR theory. Accordingly, vigour and emotional exhaustion were examined, as they refer to the energy dimension of work engagement and occupational burnout (Demerouti, Mostert, & Bakker, 2010). The concept of work engagement is defined as ‘a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication and absorption’ (Bakker, Schaufeli, Leiter, & Taris, 2008; Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Vigour refers to high levels of energy and mental resilience while working, the willingness to invest in one’s work, and persistence in the face of difficulties (Schaufeli et al., 2002). Vigour can be viewed as the main component of work engagement, and potentially a prerequisite for other aspects within it because an individual needs energy to be able to dedicate and absorb to the work (Shirom, 2010). In addition to vigour, work engagement was examined as consisting of dedication, which refers to identification with one’s work, that is, experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge (Schaufeli et al., 2002). In sum, work engagement is an affective-cognitive concept that describes positive job-related well-being with high activation level.

Concerning low levels of energy, emotional exhaustion is considered as a key dimension of occupational burnout (Maslach, Schaufeli, & Leiter, 2001). In addition to exhaustion, occupational burnout consists of cynicism (a distant attitude toward the job) and lowered professional efficacy (Maslach et al., 2001). Emotional exhaustion refers to feelings of overstrain, tiredness, and fatigue resulting from long-term involvement in an over-demanding work situation that has depleted an individual’s overall energy (Maslach et al., 2001). Thus, exhaustion was investigated as job-related ill-being that is characterized by low activation level and feelings of displeasure.

Although both vigour and exhaustion indicate the level of energy at work, they have been shown to be independent constructs to a certain degree rather than being two endpoints of the same energy continuum (Demerouti et al., 2010; Mäkikangas, Feldt, Kinnunen, & Tolvanen, 2012). Instead, with regard to the identification

dimension in occupational well-being, dedication and cynicism have been found to be opposite ends of the same continuum (Demerouti et al., 2010). Accordingly, only dedication was examined in this study, but both vigour and exhaustion were included. Overall, it is widely agreed that energy and identification are particularly relevant dimensions of occupational well-being (Bakker et al., 2008; González-Romá, Schaufeli, Bakker, & Lloret, 2006; Demerouti et al., 2010).

Exhaustion was examined in Study II, III, and IV, while vigour was examined in Study II and III. Concerning Study III, work engagement was examined as consisting of vigour and dedication.

#### 1.4.1.2 Depressive symptoms

Depressive symptoms, indicating context-free ill-being, are described by displeasure and low activation level (Russel, 1980; Warr, 2013). In general, depression may refer to a relatively light, temporary decrease in mood or, alternatively, to a severe, profoundly impairing mood disorder with affective, cognitive, behavioural, and physical symptoms (Hammen & Watkins, 2008). The core symptoms of clinical depression are lowered mood, loss of pleasure or interest, and decreased energy, while other potential symptoms are, for example, feelings of inappropriate guilt, loss of self-confidence, difficulties in concentrating, and sleep problems (Bech, Rasmussen, Olsen, Noerholm, & Abildgaard, 2001; Hammen & Watkins, 2008). Depressive symptoms were regarded as the accurate term in this study because the aim was to examine also milder forms of symptoms that may not fulfil the diagnostic criteria of a depressive disorder (Ahola et al., 2006). Depressive symptoms, denoting a considerable loss of quality of life, are a highly relevant outcome to investigate and are quite common in the working population. In a Finnish population-based study, 19% of the participants reported experiencing these symptoms (Ahola et al., 2006). Furthermore, depression causes considerable indirect economic costs in the form of decreased productivity, sickness absences, and disability pensions on a global level (e.g. Luppá et al., 2007).

Although depression or depressive symptoms refer to general symptoms that are not restricted to the domain of employment, a large body of knowledge has documented that work-related factors, particularly high job demands, low decision latitude, and low social support, are also relevant in the development of depression (for reviews, see Bonde, 2008; Netterström et al., 2008; Stansfeld & Candy, 2006; Theorell et al., 2015). For example, the most recent high-quality review concluded that there is moderately strong evidence for job strain (high psychological demands

and low decision latitude) having significant impact on the development of depressive symptoms (Theorell et al., 2015). Importantly, job demands, as externally assessed by job analysis experts, were also found to be higher among depressed employees in comparison to those in a healthy control group (Rau, Morling, & Rösler, 2010). Concerning evidence from an intervention study, depression scores decreased among Japanese blue collar workers during a two-year follow-up period after the implementation of a stress reduction program (Kawakami, Araki, Kawashima, & Masumoto, 1997). Supervisors played a prominent role in this intervention, and concrete improvements in the working environment were accomplished with respect to work processes. In sum, there is accumulated evidence in support of the view that factors in the work environment contribute to depressive symptoms.

In addition, the link between work and depression has gained prominence in the study of occupational burnout. Burnout and depression are distinct but closely related concepts that cover partly overlapping phenomena (Ahola et al., 2005; Ahola, Hakanen, Perhoniemi, & Mutanen, 2014). For example, lack of energy is characteristic for both syndromes (Bech et al., 2001; Schaufeli & Buunk, 1996). The results of a prospective study based on an inventive design demonstrated that burnout predicted new cases of depression, and that depression also predicted new cases of burnout (Ahola et al., 2007). In particular, burnout seems to play a crucial mediating role in the path from job strain to depression (Ahola et al., 2007). To sum up, work-related factors are relevant in the study of impaired well-being and decreased energy because the effects that derive from the domain of employment may develop into pervasive symptoms that also affect other areas of life.

Depressive symptoms were investigated in Study I.

#### 1.4.2 Recovery from work as restoration of energy resources

The role of recovery from work for sustained employee well-being has been increasingly acknowledged and investigated during the past 10 years (e.g. Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2007; Sonnentag & Fritz, 2015; Geurts, Beckers, & Tuckers, 2014). In the current study, recovery from work was essentially regarded as the restoration of energy resources (Zijlstra et al., 2014). As stated above, a central aspect in occupational well-being is energy, which is needed to respond to the job demands at work (Bakker & Demerouti, 2007). In keeping with the COR theory (Hobfoll, 1989), energy is therefore a focal resource in the work setting

(Zijlstra et al., 2014). Although the COR theory is a general stress theory, it is often applied in the study of recovery from work, as it explicitly posits that individuals need to regain resources after resource investment in order to avoid psychological stress reactions (Hobfoll, 1989). The role of recovery is also acknowledged, albeit not directly discoursed, in the JD-R model, in connection to the nature of job demands (Bakker & Demerouti, 2007). According to the JD-R model, the physiological and psychological costs that are associated with responding to job demands are dependent on whether the employee has adequately recovered from previous effort, as presented earlier.

The crucial role of recovery from previous effort is elaborated in the Effort-Recovery model (Meijman & Mulder, 1998). As a work psychological model specifically focusing on the load reactions following mental and physical workload, the Effort-Recovery model is a central theory in psychological recovery studies (e.g. Geurts & Sonnentag, 2006; Zijlstra et al., 2014). The basic assumption of the Effort-Recovery model is that short-term, stress-related psychophysiological load reactions associated with effort expenditure at work are reversible, that is, the psychophysiological systems return to the baseline level when the load exposure ceases, i.e. when no special demands are made on the individual (Meijman & Mulder, 1998). However, if recovery from previous effort is insufficient, the individual stays in a suboptimal state (less energy available than required) and compensatory effort is needed to respond to the job demands. This extra effort further increases the accumulation of load reactions. In contrast to the normal, short-term load reactions, continued exposure to job demands coupled with incomplete recovery leads to more chronic psychological and physiological symptoms, such as chronic fatigue (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998). In the current work, recovery from work was addressed through the effects of incomplete recovery.

### 1.4.3 Work-related rumination in the context of recovery from work

It has long been recognized that cognitive processes may prolong stress-related physiological activity and may thereby interfere with the recovery process (Brosschot et al., 2006; Geurts & Sonnentag, 2006). Work-related rumination refers to unintentional, conscious, and recurrent thoughts on work-related problems without the immediate presence of demands that would require these thoughts (Brosschot et al., 2006; Martin & Tesser, 1996; Syrek & Antoni, 2014). According to the model of rumination by Martin and Tesser (1996), ruminative thoughts are particularly

instigated by problems in attainment of personally important goals. An important characteristic of these thoughts is their compelling nature; ruminative thoughts are difficult to eliminate. Following the broad definition by Martin and Tesser (1996), the concept of rumination is similar to that of perseverative cognition, that refers to worry, rumination, and anticipatory thoughts in general. Essentially, perseverative cognition is defined as ‘the repeated or chronic activation of the cognitive representation of one or more psychological stressors’ (Brosschot et al., 2006, p. 114). The perseverative cognition hypothesis states that it is through perseverative cognitions and the resulting prolonged stress-related physiological activation that psychosocial stressors turn into ill health (Brosschot et al., 2006; Ottaviani et al., 2016).

The concept of work-related rumination relates the current study to research on recovery from work stress. In this respect, the concept of psychological detachment from work is important. In the presence of ruminative thoughts on work-related matters, the core recovery experience of psychological detachment from work cannot occur. Recent research on recovery has paid closer attention to the affective valence of work-related thoughts (Wendsche & Lohmann-Heischl, 2017) and emphasized the detrimental role of negative affective valence and perseverative nature of the ruminative thoughts (Flaxman, Ménard, Bond, & Kinman, 2012; Querstret & Cropley, 2012; Syrek, Weigelt, Peifer, & Antoni, 2017). Whereas psychological detachment refers to the absence of all kinds of job-related thoughts (Sonnentag & Fritz, 2015), work-related rumination denotes the crux of poor detachment because of the prolonged activation related to it (Brosschot et al., 2006; Geurts & Sonnentag, 2006). In keeping with the stressor-detachment framework (Sonntag & Fritz, 2015), in the current study, job demands were investigated as antecedents to work-related rumination and thereby to the disruption of the recovery process. A notable body of research shows that difficulties in mentally switching off from work are related to job demands (see Sonnentag & Fritz, 2015; Wendsche & Lohmann-Heischl, 2017, for reviews). Similar results have been reported on the relationship between job demands and, specifically, work-related rumination (Berset et al., 2011; Cropley & Purvis, 2003; Querstret & Cropley, 2012; Syrek & Antoni, 2014).

Work-related rumination and lack of detachment, in turn, relate to strain reactions (see Sonnentag & Fritz, 2015, for a review). For example, a diary study found that participants high in rumination showed greater cortisol secretion in the evening and flattened cortisol awakening response in the morning (Cropley, Rydstedt, Devereux, & Middleton, 2015). More generally, preliminary evidence

suggests that states and traits of perseverative cognitions are related to a wide range of physiological concomitants that are known to be risk factors for organic diseases, such as cardiovascular disease (see Brosschot et al., 2006; Ottaviani et al., 2016, for reviews). In particular, in the current study work-related rumination was conceived to contribute to the development of exhaustion, as the stressful work-related thoughts impede the restoration of energy resources (Sonnentag & Fritz, 2015; Zijlstra et al., 2014).

Work-related rumination was examined in Study I and IV in the present work.

## 1.5 Previous studies on leadership and employee well-being

### 1.5.1 Overview

A considerable amount of studies have explored leadership in relation to employee well-being, and several reviews have been published (Donaldson-Feilder, Munir, & Lewis, 2013; Kuoppala et al., 2008; Ndjaboué et al., 2012; Skakon et al., 2010). Overall, relating supervisor behaviours to employee well-being is not a new topic as such, but research in this area has expanded remarkably in the first and second decades of the 21st century (e.g. Donaldson-Feilder et al., 2013). This increase in the interest appears to relate to the neo-charismatic or heroic leadership paradigm that elevated leadership research in general (Alimo-Metcalf, 2013; Hunt, 1999). Further, the exploration of the role of leadership in employee well-being can be seen to derive from the intensification of working life and increasing mental demands that call for psychologically competent management.

While the studies differ in regard to the design, and the leadership and well-being constructs examined, on a general level, at least three streams of research may be distinguished. First, research on social support from the supervisor is among the oldest lines of study reporting that supervisor behaviours are related to employee well-being (e.g. Karasek, Triantis, & Chaudhry, 1982; see Lee & Ashforth, 1996; Halbesleben, 2006; Skakon et al., 2010, for reviews). The second stream comprises the literature concerning organizational justice, and it involves studies that focus on the justice behaviours of supervisors (e.g. Kivimäki et al., 2005; Ndjaboué et al., 2012). The third stream pertains to studies investigating specific leadership styles in relation to employee well-being. Most often, the styles refer either to neo-charismatic (heroic) leadership styles such as transformational leadership, or to post-heroic

models of leadership, such as authentic leadership (Alimo-Metcalfe, 2013). Moreover, a wide range of supervisory behaviours, in a narrower sense than leadership styles, have been investigated in relation to employee well-being without clear reference to any of the streams of theoretical perspectives described above (e.g. Donaldson-Feilder et al., 2013; Kuoppala et al., 2008). On the constructive side, conflict management serves as an example. Further, research on various conceptualizations of destructive forms of leadership (Schyns & Schilling, 2013), such as abusive supervision, may be categorized into these behaviours.

The next sections provide a review of previous studies on leadership and employee well-being. I begin by reviewing longitudinal studies, and end this section by focusing on critical methodological issues that are raised by the existing research. I then continue to briefly review intervention studies and those based on experience sampling. Setting the stage for the present work, I then move on to deal with the mediating factors between leadership and employee well-being, and provide a closer look at the similarities in research on transformational leadership and the justice behaviours of supervisors (fair leadership).

## 1.5.2 Longitudinal studies on leadership and employee well-being

Compared to the abundance of cross-sectional studies, high quality longitudinal studies on leadership and employee well-being are still scarce (Kuoppala et al., 2008; Skakon et al., 2010). In this context, the results of the epidemiological Whitehall II Study in which British civil servants were followed from the mid 1980's, are still topical (Ferrie et al., 2006; Stansfeld et al., 1997). In that study, social support from supervisors was made up of two types: support from supervisors and clarity and consistency of information from supervisors. Social support from supervisors predicted less depression and anxiety (Stansfeld et al., 1999), and short spells of psychiatric sickness absences (Stansfeld et al., 1997) at the follow-up that was conducted an average of 5 years later. Baseline scores of the symptoms were controlled for in the analyses, and the role of personality factors in terms of negative affectivity and hostility was additionally examined (Stansfeld et al., 1999). In support of supervisors' role in employee well-being, both the Whitehall results and the results from two meta-analyses suggest that supervisor support is somewhat more strongly related to psychological distress or exhaustion than is support from coworkers or other sources (Halbesleben, 2006; Lee & Ashforth 1996).



Concerning the Whitehall II Study, reversed relationships were not examined (e.g. from psychological distress to lowered social support from supervisors across time). Cross-lagged panel studies, instead, are informative also in regard to the reversed relationships (e.g. Selig & Little, 2012). In these studies, both directions of influence are examined while autoregressive stabilities of both the predictor and the outcome are included in the model. However, only cross-sectional relationships between leadership and employee well-being were found in a 4-wave cross-lagged panel study using 4–5-month time-lags (van Dierendonck, Haynes, Borrill, & Stride, 2004). In that study, well-being concerned affective well-being (measured primarily as psychological distress) and leadership comprised nine subscales concerning, for example, feedback, support, fairness, and empowerment. Another 4-wave cross-lagged study, however, found reciprocal relationships between low social support from the supervisor and employee exhaustion (de Lange et al., 2004). In a model involving multiple variables, low social support from the supervisor was related to exhaustion across a one-year time, and similarly, exhaustion was related to later low social support from the supervisor.

Regarding transformational leadership and an even longer time lag of 18 months, Nielsen et al. (2008) examined work characteristics as mediators between transformational leadership and affective well-being among Danish elderly care staff. As a result, they reported a model in which high well-being was related to later transformational leadership, thereby indicating a reversed relationship. Similarly, based on the same data, high employee self-efficacy was related to later transformational leadership (Nielsen & Munir, 2009). Aside from reversed relationships, transformational leadership was found to be related to low levels of depressive symptoms among employees both cross-sectionally and prospectively, across a time-lag of 18 months (Munir, Nielsen, & Carneiro, 2010, further using the same data as Nielsen et al., 2008). In this study, however, the initial depression levels were not controlled for, which leaves open the possibility that the relationships over time are mere reflections of the cross-sectional relationships due to the stability of the variables (e.g. Kelloway & Francis, 2013; Selig & Little, 2012). To the best of my knowledge, thus far no study has demonstrated a relationship from transformational leadership to employee well-being across time while taking into account the stability of well-being, that is, while controlling for the level of well-being in the previous measurement.

In regard to supervisor fairness, there is more medically oriented longitudinal research that has found relationships between interpersonal injustice and objectively measured health outcomes. For example, in a longitudinal study among hospital

personnel, interpersonal injustice predicted medically certified sickness absences and (self-rated) psychological distress across a time lag of 1–2 years (Kivimäki et al., 2003). Importantly, the relationships persisted after adjusting for a number of biological and behavioural risk factors, and they were shown to exist in an initially healthy subcohort. Similarly, in the large-scale Finnish Public Sector Study, low interpersonal justice was prospectively related to sickness absences due to anxiety disorders in an initially healthy subsample (Elovainio et al., 2013). Importantly, the relationship remained significant even when interpersonal justice was examined on the basis of work-unit mean scores.

Further on fair treatment, favourable and adverse changes in interpersonal justice (broadly defined) predicted lower and higher psychiatric morbidity (depression and anxiety) among individuals who were initially free of these symptoms in the Whitehall II Study (Ferrie et al., 2006). Similarly, low supervisor fairness was related to persistent fatigue across 15 months among nurses' aides without persistent fatigue at baseline (Eriksen, 2006). In that study, supervisor support and other factors close to leadership, such as feedback and rewards for well-done work, were also found to be important for recovery from fatigue or for the development of fatigue. Regarding serious physical health outcomes, interpersonal injustice has been shown to predict cardiovascular disease (Kivimäki et al., 2005) and cardiovascular mortality (Elovainio et al., 2006). Aside from justice, a composite measure of various task- and employee-oriented supervisor behaviours predicted cardiovascular occurrences, that is, infarcts or deaths, across a mean time lag of 10 years (Nyberg et al., 2009). The strongest predictors were low values in items stating that the supervisor praises good work, explains the goals and subgoals of the work, and is good at implementing changes.

In regard to negative forms of leadership, Tepper (2000) found abusive supervision to significantly relate to employees' depression, anxiety, and exhaustion measured six months later. However, both leadership and psychological symptoms were measured only once so that the longitudinal association may be explained by the stability of the constructs. On the positive side, authentic leadership was examined among newly graduated nurses in a one-year follow up study using growth curve modelling (Laschinger & Fida, 2014). Authentic leadership was related to the initial levels of exhaustion and cynicism, but it seems that authentic leadership did not directly explain variation in exhaustion and cynicism across time (multiple variables in the model). However, low initial levels of exhaustion and cynicism mediated the impact of authentic leadership on exhaustion, cynicism, and depressive symptoms one year later.

### 1.5.3 Evaluating previous longitudinal studies

It seems that thus far only one study has demonstrated a significant relationship from leadership to employee well-being in a cross-lagged panel design (de Lange et al., 2004). However, this study is equivocal in its results, as it found reciprocal relationships between supervisor support and employee exhaustion (de Lange et al., 2004).

Related to the existing longitudinal studies, there are methodological concerns that deserve to be recognized. These concerns centre on the theme of change and they can be seen to contribute to the relative lack of findings. The first concern relates to the seemingly trivial precondition of longitudinal research: if a longitudinal study is to be seen as more valuable than a cross-sectional study, it has to demonstrate change in the variables of interest (Kelloway & Francis, 2013; Ployhart & Vandenberg, 2010). Particularly leadership, but to some extent also employee well-being, shows a relatively high rank-order stability (i.e. high correlations between measurements), thereby indicating only little change in the order of individuals between measurements. High stabilities of trait-like, time-invariant constructs have recently been recognized to pose problems for a cross-lagged panel analysis, potentially leading to false conclusions about the direction of the effect (Hamaker, Kuiper, & Grasman, 2015).

The second issue of concern is specific to longitudinal leadership studies. The fact that some of the employees in a sample may rate a different supervisor at different times of measurement is often ignored in longitudinal leadership studies (see de Lange et al., 2005; van Dierendonck et al., 2004, for exceptions). However, it is common in workplaces that the immediate supervisor changes as result of, for example, longer leaves or organizational changes. In addition, it is not rare that employees have several supervisors, such that they may end up rating different supervisors at different measurement times.

Ignoring supervisor replacements has consequences for longitudinal models, as the stability of leadership ratings becomes lower if the supervisor changes. A valuable exception in this regard is the study by van Dierendonck et al. (2004), in which the authors reported that the employees 'who participated more than once rated the same manager at each time point' (p. 167). The stabilities (test-retest correlations) of the leadership ratings in this study were  $r = .71-.73$  for subsequent measurement waves with intervals of 4–5 months, and  $r = .59$  for the 14-month lag between T1 and T4. Concerning transformational leadership, a stability of  $r = .67$  has been reported for a 12-month time-lag (Tafvelin, Armelius, & Westerberg, 2011) and a

stability of  $r = .48$  for a time lag of 18 months (Nielsen et al., 2008). Thus, the stabilities of leadership are high but seem to decrease as the time lag becomes longer. On the other hand, it is unclear from most of the reported studies to what extent the actual change of the supervisors contributed to the stabilities, and thereby, to the results.

The third issue concerns the lack of knowledge on the appropriate time frame in which the effects of leadership should unfold. This knowledge would, however, be crucially important for drawing correct inferences from an explanatory longitudinal study (Mitchell & James, 2001; Kelloway & Francis, 2013; Podsakoff et al., 2003; Selig & Little, 2012; Spector & Meier, 2014). Given that a descriptive understanding of the process under investigation is a prerequisite for determining the appropriate time lag, the need of descriptive studies on change is salient (Kelloway & Francis, 2013).

To conclude, the evidence from longitudinal studies on leadership and employee well-being has been inconclusive. In general, thus far there seems to be strongest support for the beneficial effects of supervisor support and supervisor-related justice (Elovainio et al., 2013; Ferrie et al., 2006; Kivimäki et al., 2003). However, the results from previous studies are not directly comparable with each other, as they are based on different methodological and analytical choices which affect the results (e.g. whether the baseline was controlled for, whether the reversed direction was examined, whether there were other independent variables in the model). Results from the few studies that have applied a cross-lagged panel design have varied from no relationships over time (van Dierendonck et al., 2004) to a reversed relationship (Nielsen et al., 2008; Nielsen & Munir, 2009) or reciprocal relationships (de Lange et al., 2004). Thus, on the basis of evidence to date, it seems premature to fix the order of influence simply from leadership to employee well-being.

#### 1.5.4 Evidence from intervention and experience sampling studies

While the published studies have been mainly cross-sectional and a relative lack of high-quality longitudinal studies prevails, it is important to note that promising results from intervention studies have also been reported (see Donaldson-Feilder et al., 2013, for a review). In a prominent controlled intervention study, managers of the intervention group were trained in mandatory 2-hour sessions consisting of group discussions and short lectures taking place every second week during one year (Theorell, Emdad, Arnetz, & Weingarten, 2001). According to the results, serum

cortisol levels decreased and additionally decision authority (control at work) increased among employees of the intervention group managers. In another controlled intervention study, interactional justice training targeted at supervisors was successful in attenuating insomnia among their subordinates, who were hospital nurses suffering from pay cuts (Greenberg, 2006).

Finally, a few experience sampling studies have produced interesting insights into the role of supervisors in employee well-being (Syrek & Antoni, 2014; Volmer, 2015). Experience sampling refers to the study design in which immediate experiences are recorded or reported, typically in short intense time frames (Fisher & To, 2012; Sonnentag, Binnewies, & Ohly, 2013). In these studies, the analyses focus on the variation within an individual from one measurement to another. A momentary mood recording study found that negative work-related and negative supervisor-related events at work had a particularly strong impact on employee mood during the work day (Miner, Glomb, & Hulin, 2005). Whereas the relationship between supervisor-related positive events and positive mood was found to be stronger for those who typically started off the day in positive mood, negative events seemed to impact everyone alike. Another study was based on a quasi-experimental design and used blood pressure recordings among health care assistants (Wager et al., 2003). The results showed that on days when the assistants worked under less favourably perceived supervisor, their blood pressure was higher. Among the four dimensions of supervisor interactional style examined in the study, interpersonal fairness was reported to be the best predictor of differences in blood pressure. However, it can be seen that the questionnaire items on interpersonal fairness were quite broad in their scope, referring also to timely feedback and flexibility concerning individual needs (Wager et al., 2003, p. 142).

In sum, results from the few experience sampling studies and quasi-experimental studies support the view that leadership has an influence on employee well-being.

### 1.5.5 How do leaders influence employee well-being: Mediating factors

While on a very general level the influence of management on the psychosocial work environment for employees is evident, the specific role of immediate supervisors varies considerably depending on the type of job, the type of organization, and the position of the immediate supervisor with respect to the organization at large. In any case, immediate supervisors act as organizational authorities and thereby form a link between an individual employee and the larger organization. Independent of the

often limited possibilities of the immediate supervisors to modify the structural aspects of the job or objective work characteristics (such as autonomy, skill discretion, or workload), they influence their subordinates psychologically and thereby modify employees' working experience (Nielsen et al., 2008; Piccolo & Colquitt, 2006). Particularly transformational leaders are described to excel in the management of meaning and social information (Piccolo & Colquitt, 2006). Accordingly, there have been calls for studies on the processes through which leaders exert an influence on their employees' motivation and well-being (e.g. Skakon et al., 2010). With regard to these processes, it is possible to specify the psychological factors that leaders potentially have an effect on, and that further contribute to employee well-being.

The transformational leadership theory posits effects particularly on employee motivation (Bass, 1985; Judge & Piccolo, 2004). It follows naturally therefrom that the experience of meaningfulness and belief in one's own capability are expected to be affected by transformational leadership (Bono & Judge, 2003). Several if not all aspects of transformational leadership can be expected to increase meaningfulness among employees, including the leader's own example of value-based commitment to the higher purpose of the work and the ability to convey this purpose to the employees (Bass, 1985; Piccolo & Colquitt, 2006). In other words, transformational leaders appeal to higher-order needs among followers (Bass, 1985; Yukl, 1989). Regarding self-efficacy beliefs, transformational leaders express confidence in their followers' capability and thereby build self-confidence among them, while also conveying high expectations on performance (Bass, 1985; Podsakoff et al., 1990). These aspects are jointly expected to enhance follower self-efficacy (Bass, 1985; Yukl, 1989). Potentially contributing to both meaningfulness and self-efficacy among employees, transformational leaders are respected and admired because of their competence, and they provide a role model for their followers. Further, transformational leaders acknowledge individual differences and provide individualized support for employee development. Additionally, the questioning of old assumptions and encouragement for adoption of new approaches may serve the same purposes from a more intellectually stimulating point of view (Bass, 1985, Yukl, 1989).

In line with this reasoning, earlier research has indicated that the meaningfulness of the work (Arnold, Turner, Barling, Kelloway, & McKee, 2007; Ghadi, Fernando, & Caputi, 2013; Nielsen et al., 2008; Nielsen & Daniels, 2012) and self-efficacy (Liu, Shiu, & Shi, 2010, Nielsen & Munir, 2009, using the same data as Nielsen et al., 2008) mediate the effect of transformational leadership on employee well-being. However,

findings on the relationship between transformational leadership and self-efficacy have been somewhat inconsistent because in some studies the constructs were not related (van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004; Nielsen & Munir, 2009; Felfe & Schyns, 2002). Thus, despite deeply-rooted theoretical assumptions, self-efficacy can not be considered as a self-evident mediator on the basis of empirical studies. Furthermore, mediators of transformational leadership have been examined most often in relation to positive affective well-being among employees (e.g. Nielsen et al., 2008), with an exception of stress symptoms (Liu et al., 2010). Thus, although transformational leadership has been shown to relate negatively to burnout (e.g. Hetland, Sandal, & Johnsen, 2007; Kanste, Kyngäs, & Nikkilä, 2007; Stordeur, D'Hoore, & Vandenberghe, 2001) and depressive symptoms (Munir et al., 2010) among employees, mediating mechanisms concerning employee ill-being have not been examined.

Concerning pathways for the effects of transformational leadership, the current work (Study I) focused directly on the psychological factors that concern the relationship between the individual and the job. These psychological factors can be considered as work-related personal resources of employees indicating a psychologically healthy relationship between the internal world of the individual and the external context of the workplace (Cartwright & Holmes, 2006). According to the COR theory, personal resources can be defined as ‘aspects of the self that are generally linked to resiliency’, typically referring to ‘individuals’ sense of their ability to successfully control and impact their environment, especially during challenging circumstances’ (Hobfoll, Johnson, Ennis, & Jackson, 2003, p. 632). Thus, as opposed to personality traits, personal resources are susceptible to change and they may be enhanced or impaired as a result of environmental factors. Personal resources are also mentioned as an extension to the JD-R model (Bakker & Demerouti, 2007); job resources foster personal resources, which, in turn, enhance well-being (e.g. Bakker & Demerouti, 2016; Weigl et al., 2010; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

Self-efficacy is perhaps the most studied aspect of personal resources, referring to an individual’s expectations that (s)he can successfully achieve certain outcomes and thereby exercise control in relation to events that affect one’s life (Bandura, 2000). According to Bandura (2000), it is pertinent to examine context-specific instead of general self-efficacy. Therefore, the current study examined occupational self-efficacy, which is described as ‘the competence that a person feels concerning the ability to successfully fulfil the tasks involved in his or her job’ (Rigotti, Schyns, & Mohr, 2008, p. 239). Furthermore, in the present work, the meaningfulness of the

work was also conceptualized as a personal resource because deriving significance and finding purpose in one's work seems to be a subjective experience to a considerable extent (Clausen & Borg, 2011; Nielsen & Daniels, 2012).

While the concepts of self-efficacy and the experiences of meaningfulness have repeatedly been included in studies on transformational leadership, empirical studies on leadership behaviours that promote or hinder employees' recovery experiences are notably scarce. However, it could be expected that leaders play part in how easy or difficult it is for employees to switch off from work issues during their leisure time. Unintentional stressful thoughts on work-related matters significantly decrease the quality of recovery from work (Geurts & Sonnentag, 2006), thereby hindering the energy restoration process (Zijlstra et al., 2014) and contributing to the development of exhaustion and clinical burnout (Flaxman et al., 2012; Söderström et al., 2012). Similarly in the depression literature, ruminative thinking has been seen as a precipitator of depressive symptoms (see Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008, for a review). Thus, retaining the voluntary control or capability to leave stressful work-related matters aside when one intends to do so can be seen as a personal resource. Involuntary and intrusive thoughts on work stressors indicate loss of this personal resource, without which regain of energy resources is threatened. Work-related rumination is therefore a potential mediator between leadership and health impairment among employees. Based on the earlier results on the beneficial effects of transformational leaders (Arnold & Connelly, 2013; Skakon et al., 2010), it can be expected that employees who have transformational leaders report lower levels of work-related rumination.

These three mediators were examined in Study I in the present work.

### **1.5.6 Transformational and fair leadership in relation to employee well-being**

In occupational health psychology, transformational leadership style has gained a dominant position as a leadership style that fosters employee well-being (Arnold & Connelly, 2013; Kelloway, Turner, Barling, Loughlin, 2012; Skakon et al., 2010). Beyond mere affective well-being, there is an inherent theoretical appeal in the transformational leadership theory to explore it in relation to employee motivational outcomes (see Judge & Piccolo, 2004, for a review). For example, in a field study and in an experimental simulation, Bono and Judge (2003) found partial support for their self-concordance model on transformational leadership, which is based on the



assumption that followers of transformational leaders find their work more meaningful and self-expressive. Similarly, positive relationships between transformational leadership and the affective-motivational state of work engagement have been reported (Ghadi et al., 2013; Tims, Bakker, & Xanthopoulou, 2011). Taken together, these studies lend support for the view that transformational leadership fosters motivation and positive well-being among employees.

Additionally, regarding employee ill-being, as mentioned above, research has consistently shown that transformational leadership relates negatively to employee burnout symptoms. However, the relationship became nonsignificant in these studies when the other aspects of leadership or working environment were taken into account (e.g. Hetland et al., 2007; Kanste et al., 2007; Stordeur et al., 2001). This observation on lack of independent relationships raises the issue of priority with regard to factors that contribute to burnout because the other factors seem to be more detrimental to employee well-being (i.e. they explain more unique variance in burnout) than the lack of transformational leadership. On the basis of the JD-R model and the challenge-hindrane framework, it could be expected that the hindrance type of demands in leadership and work characteristics would be more harmful than a mere lack of a resources in regard to impaired employee health (Bakker & Demerouti, 2007). Unfair treatment by a supervisor can be viewed as such a hindrance demand because coping with unfairness (injustice) certainly evokes negative emotions (Colquitt et al., 2013; Ford & Huang, 2014) and is associated with energetic costs, without any rewarding experiences in exchange for the effort expended (Crawford et al., 2010).

Supervisor fairness is indeed recognized as an integral dimension in good quality relationships between supervisors and employees. In effect, fairness can be considered as a base for the relationship between a leader and a follower, or ‘a psychological platform on which transformational leadership is built (at least partly)’ (De Cremer et al., 2007, p. 1788). In contrast to transformational leadership, fairness refers to a more elementary aspect in leadership, particularly without the visionary and inspirational behaviours. Besides the structural aspects of organizational justice, the organizational justice literature has documented that the justice behaviours of nearby leaders are relevant in relation to employee health and well-being (see Greenberg, 2010; Robbins et al., 2012, for reviews). As mentioned, in the meta-analysis by Robbins et al. (2012), interactional injustice particularly predicted burnout and perceived stress above the distributive and procedural forms of justice. This result can be interpreted to directly support the view that justice behaviours of the immediate supervisors are particularly important with regard to employee strain

reactions. Consistent with this, it has been suggested that interactional injustice may be particularly offensive and threatening to the self-worth of employees because of its personal and episodic nature (Ford & Huang, 2014).

There are studies conducted in various designs that support the effects of supervisor fairness on employee well-being. For example, in a longitudinal study among hospital personnel, interpersonal justice predicted medically certified sickness absences and psychological distress (Kivimäki et al., 2003). Furthermore, as mentioned, interactional justice training among supervisors has been reported to have an effect on insomnia among employees in a pay-cut situation (Greenberg, 2006; Greenberg, 2010). Some studies have also revealed group level effects of supervisor-related justice aspects, with the group context referring to employees that rate a shared leader within a work unit. For instance, the relationship between interactional injustice and burnout has been corroborated on work-unit level (Moliner, Martínez-Tur, Peiró, Ramos, & Cropanzano, 2005), and similarly, low levels in supervisor-referenced procedural justice were related to psychological distress and sleep disturbances at the group level (Way et al., 2014).

Based on earlier studies and several theoretical models, Ford and Huang (2014) propose potential pathways that link injustice to health impairment among employees. To the extent that injustice is a causal factor contributing to ill health, the effects may exist, first, because injustice threatens employees' trust in the organization and thereby evoke threat appraisals that relate to stress responses. Second, injustice may elicit threats to self-worth, as injustice signals to employees that they are not valued by the organization. The third underlying mediating mechanism concerns moral emotions as reactions to injustice, such as anger, disgust, and contempt, each with their own characteristics in the context of justice. Accordingly, the unjust behaviour of a supervisor potentially leads to impaired health by degrading trust of employees (Colquitt et al., 2013), eliciting threat to their self-worth, or evoking negative moral emotions.

The organizational justice literature has been primarily concerned with undesirable health and well-being outcomes. There is, however, evidence that fairness also relates to positive states among employees. Specifically, a meta-analysis indicated that justice was positively related to state positive affect, which implies that 'justice seems to make people feel good to the same degree that injustice makes them feel bad' (Colquitt et al. 2013, p. 216). At the same time, it is important to note that justice has implications beyond affect, as demonstrated by the results of a diary study of 25 consecutive working days (Loi, Yang, & Diefendorff, 2009). This study revealed that day level perceptions on interpersonal and informational justice from

supervisors were related to day level job satisfaction, even when controlled for daily positive emotions and dispositional positive affectivity. These findings may relate to positive moral emotions of gratitude and admiration associated with the experience of justice (Ford & Huang, 2014).

Inclusion of positive affective outcomes brings research on supervisor fairness even closer to studies on transformational leadership. On a more general level, there have been several calls for the integration of leadership studies and those on social justice in organizations (e.g. De Cremer, 2007; van Knippenberg et al., 2007). To date, however, studies on transformational leadership and supervisor-related justice have remained separate research streams, despite the similarity in the research objectives related to employee health and well-being outcomes. Therefore, it is unclear whether the effects of fairness and transformational leadership are redundant or complimentary with respect to well-being and ill-being among employees.

This question was examined in Study III in the present work.

## 1.6 Toward understanding the long-term development of leadership and employee well-being

### 1.6.1 Follower-centric view on the topic

Previous studies on leadership and employee well-being have almost without exception been leader-centric, that is, they have focused on the effects of leaders on their followers. However, as these studies rely almost exclusively on employee perceptions of the behaviours of their leaders, it is necessary to consider that type of information more closely. Approaching the association between leadership and employee well-being from a follower-centric view, it becomes evident that there is more to employee ratings of leadership than actual leader behaviours. The follower-centric view addresses followers' mindset as a starting point for the evaluation and acceptance of a leader and focuses on followers' internal psychological processes in explaining follower reactions to their leaders (e.g. Felfe & Schyns, 2010; Hansbrough, Lord, & Schyns, 2015; Uhl-Bien et al., 2014).

In an extensive review on factors that influence followers' leadership ratings (Hansbrough et al., 2015), affect appears as the factor that combines various literatures in this regard, such as literatures on person perception, individual differences (affectivity, personality), and the role of affect in information processing

(e.g. Fiske & Taylor, 2013; Schwarz, 1990). In general, mood-congruence in memory and judgement are well-documented effects in the literature on social cognition (Clare & Martin, 2012; Fiske & Taylor, 2013). The evidence for the influences of positive mood is particularly consistent, while the results on the effects of negative mood are more varied (Fiske & Taylor, 2013). Concerning empirical leadership studies, the ratings of transformational leadership and charisma (the idealized influence component) have gained research attention from the follower-centric point of view (e.g. Brown & Keeping, 2005; Felfe & Schyns, 2010; Hansbrough, 2012). For example, experimental studies on mood contagion have shown that followers in a positive mood are more prone to report charismatic leadership (e.g. Johnson, 2009). It deserves to be mentioned that ratings of justice are not immune to the effects of affect either (Barsky, Kaplan, & Beal, 2011). For example, an experimental study demonstrated that both positive (happy) and negative (angry) affective states influenced justice judgments (van den Bos, 2003). Notably, however, the influence of affect was limited to conditions in which people lacked the relevant information on which to base the judgment of justice.

It is evident that high and low occupational well-being indicates positive and negative affective experiences. Therefore, the role of affect in employees' perceptions and ratings of their leaders cannot be ignored in the study of leadership and employee well-being. Accordingly, the results from longitudinal studies that have shown either reciprocal relationships between supervisor support and exhaustion (de Lange et al., 2004) or a reverse relationship from employee well-being to later transformational leadership (Nielsen et al., 2008) can be considered to support the follower-centric perspective. As noted earlier (e.g. de Lange et al., 2005; Nielsen et al., 2008; van Dierendonck et al., 2004), the relationship from employee well-being to later leadership can be explained either by the employees' negative perceptual mechanisms related to lowered well-being, or by actual changes in the leader behaviour as a consequence of employee well-being. Concerning the first explanation (de Lange et al., 2005), and in keeping with the literature on mood-congruent evaluative cognitions (e.g. Clare & Martin, 2012; Fiske & Taylor, 2013), the behaviour of the leader does not essentially change, but how the leader is rated by the employee is influenced by affective factors related to well-being. In the second interpretation, the behaviour of the leader is considered to change as a reaction to employee well-being, for example, as a result of deteriorated performance or withdrawal behaviour on the part of the follower.

Accordingly, at the core of the follower-centric perspective in the current study is employee well-being. As stated before, occupational well-being denotes energy,

which is considered an important resource for an employee in the work setting (e.g. Zijlstra et al., 2014). The impact of energy resources on interactions with one's supervisor was specifically elucidated in an interaction record study on incivility (referring to mild workplace antisocial behaviour, such as being rude) (Meier & Gross, 2015). Employees filled in a short survey after every interaction with their supervisor over a 2-week period. The results showed that when employees had experienced incivility from their supervisors, they instigated incivility against the supervisors, particularly on days when they (employees) were more exhausted than they normally were. In addition, the level of experienced incivility and exhaustion were positively related across the study period. Thus, while incivility from the supervisor may predispose employees to exhaustion, employees are more vulnerable to retaliate against their supervisors' rude behaviour when they feel that they are in a less than optimal state in terms of the energetic resources available.

In conclusion, affective factors seem to be an integral component in employees' leadership ratings. Therefore, and also on the basis of earlier studies on reciprocal or reversed relationships between leadership and employee well-being, it is necessary to loosen the causal assumptions inherent in studies on leadership and employee well-being. In addition, existent follower-centric literature and knowledge on the interplay between affect and cognition suggests that an exclusively leader-centric approach seems to undermine the complexity of the relationships between leaders and followers.

The follower-centric view was integrated particularly in Study II. Furthermore, in both longitudinal studies (Study II and IV), changes in leadership ratings were contrasted with the information on the change of the leader being rated. When a salient change occurred in employees' leadership ratings even if the leader stayed the same (same person as the rating target), it was interpreted as support for the follower-centric view.

## 1.6.2 From prediction to description of typical patterns

In research on occupational health psychology, nearly exclusive focus on explanatory research has dominated the field at the expense of descriptive understanding of the nature and timing of change in the phenomena under study (Kelloway & Francis, 2013). Accordingly, the current work responded to the calls for more descriptive studies on change in the variables of interest (Kelloway & Francis, 2013) and similarly, to the calls for studies on across-time development in mean levels (i.e.

absolute changes in contrast to the relative order of individuals) related to resource gain processes (Taris & Kompier, 2014). These aims were served specifically by utilizing the person-centred research paradigm (Bergman, et al., 2003).

The person-centred view to psychological inquiry, which originates from developmental psychology, is based on the holistic-interactionistic perspective on human development (Bergman et al., 2003; Magnusson, 1999). In this perspective, an individual is seen as an active element in the dynamic, complex, integrated person-environment system. In the person-centred approach, the focus is on individuals, processes, and patterns of multiple operating factors that are relevant to the phenomenon under study as a whole (Bergman & Lundh, 2015; Bergman et al., 2003). The focus on patterns of relevant factors instead of the predictive capacity of a single variable is consistent with the view that several factors simultaneously influence on an individual's functioning, and that the influencing factors that operate in the same direction tend to cluster together.

Therefore, examining a particular variable in isolation from other related variables overemphasizes its meaning because, in reality, the variable may gain its psychological significance because it occurs jointly with other factors (Bergman et al., 2003). In other words, it is 'usually meaningless to isolate one factor and say it causes another' as the relevant components are inextricably interwoven, referring to a situation where one cannot change one component without affecting others (Bergman & Trost, 2006, p. 612; Bergman & Lundh, 2015). Thus, the person-centred approach represents a realistic stance with regard to the possibilities of non-experimental research to differentiate genuine causal factors from merely co-occurring ones.

Considering the interwoven relationships between variables, the person-centred approach aims to examine relevant factors in a more holistic way than the variable-centred approach does (Bergman et al., 2003; Bergman & Lundh, 2015; Bergman & Trost, 2006). From a methodological point of view, the traditional variable-oriented approaches examine associations between variables (dimensions), while person-centred strategies are designed to identify distinct categories of individuals that share similar characteristics (Bergman et al., 2003; Laursen & Hoff, 2006; Lubke & Muthén, 2005). Description of these types or categories is a special strength of the person-centred approach (Laursen & Hoff, 2006). Accordingly, it is the aim of person-centred studies that the findings are interpretable at the level of the single individual, which is unequivocal with regard to results from variable-centred studies focussing on dimensions (Bergman & Lundh, 2015; Bergman & Trost, 2006). Moreover, in the person-centred paradigm, prediction is not considered as the

ultimate aim as it is in variable-centred studies. Instead, in order to better understand the relevant processes it is of importance to study robust emerging typical patterns over time (Bergman & Lundh, 2015; Bergman & Trost, 2006). For example, applied to work and organizational psychology, a person-centred study revealed how participants that showed different across-time development in effort-reward imbalance and overcommitment also displayed meaningful differences in recovery experiences and occupational well-being (work engagement and burnout) (Feldt et al., 2013; Siegrist, 1996).

In sum, the person-centred and variable-centred approaches are tied to different, even opposing assumptions, and they are thereby described to ‘contribute different answers to the same question’ (Bergman et al., 2003, p. 19). However, both these approaches have their strengths and weaknesses, and they should therefore be seen as complementary rather than contradictory approaches (Bergman et al., 2003; Laursen & Hoff, 2006). Thus, the standard variable-centred methods are well-suited for investigating the relative importance of predictor variables in explaining variance in outcome variables (Laursen & Hoff, 2006), while person-centred analyses are well suited for examining group differences in patterns of development (Laursen & Hoff, 2006). In the present work, both approaches were used. Study II and IV mainly utilized the person-centred approach, whereas Study I and III were variable-centred.

## 1.7 Gaps in previous research and contributions of the present study

Despite the considerable amount of studies on leadership in relation to employee well-being, the relative scarcity of high-quality longitudinal studies prevails. In addition, several aspects of the observed relationship have remained unclear. First, although many studies examined mediators between transformational leadership and positive well-being, there are no previous studies, to my knowledge, that would have specified the psychological factors on how lack of transformational aspects in leadership may turn into employee ill-being and even depressive symptoms. This knowledge would broaden an understanding on what kind of a resource transformational leadership is for employees and it would be important from the point of view of prevention. Further on the mediating mechanisms, previous studies have mostly examined single mediators and thereby not determined the unique

mediating effect of several mediators. Thus, their overlapping or, alternatively, independent role as mediators has not been examined.

Second, the unique role of leadership in relation to employee well-being has remained unnoticed. More specifically, the extent to which transformational leadership actually demonstrates added value for employee well-being beyond other more basic aspects of leadership, such as supervisor fairness, or work characteristics, has not been adequately investigated. Consequently, it is not known what is specific to transformational leadership as compared to more general aspects of leadership or work characteristics in enhancing employee well-being. Ignoring other factors that have long been known to influence employee well-being results in an omitted variable bias, which can be considerably reduced (albeit not totally eliminated) by investigating these factors in the same model. Specifically, as two separate lines of research, transformational leadership and organizational justice, have extensively investigated leadership behaviours in relation to employee health and well-being outcomes, the integration of these lines of research seems highly relevant. From a practical point of view, this concerns the issue whether leaders should learn transformational leadership behaviours in an attempt to be health-promoting, or whether the same level of well-being could be attained with supervisor fairness.

Given that the standard variable-centred methods are particularly suitable for investigating the relative importance of predictor variables (Laursen & Hoff, 2006), the variable-centred part of the current work focused on the unique effects of the mediating variables (Study I) and the leadership variables (Study III).

Third, leadership and employee well-being have not previously been investigated from a person-centred perspective. In the current work, a person-centred approach was adopted in the longitudinal studies (Study II and IV) as person-centred analyses are well suited for examining group differences in the patterns of development (Laursen & Hoff, 2006). This type of approach reveals, for example, what is characteristic to a priori unknown subgroups of participants that show similar across-time development of well-being. In addition, by using person-centred modelling, both within-person development and between-person differences across time are revealed. In order to understand processes and changes, it is important to examine intra-individual variation (e.g. Curran & Bauer, 2011; Spector & Meier, 2014).

Fourth, to date very little is known about the role of leadership in employee recovery from work. The results of a diary study indicated, however, that leaders play a part in how easy or difficult it is for employees to switch off from work-related



problems during the weekend (Syrek & Antoni, 2014). The current study is among the first to relate leadership and recovery from work in a long-term perspective.

Fifth, earlier studies on leadership and employee-well-being have been almost exclusively leader-centric in their approach. In other words, leaders have been viewed as exerting an influence on employee well-being, without paying attention to well-being as a valuable energetic resource as such, that potentially modifies employees' perceptions and behaviours. In this regard, the current study surpassed previous studies by utilizing objective information on the replacements of the leaders in the longitudinal studies and by considering the rate of consensus in the ratings concerning shared leaders.

## 2 AIMS OF THE STUDY

The overall objective of this work was to increase understanding on the relationship between leadership and employee well-being from a psychological perspective. The work was based on four original articles that served three main aims. The three main aims were broken down into the seven research questions presented below. The exact hypotheses can be found in the Results section and in the original articles.

The first main aim was to study mediators between transformational leadership and employee ill-being (Study I). In other words, the aim was to specify psychological factors on how the lack of transformational aspects in leadership may turn into employee ill-being in the form of depressive symptoms. The research question related to this aim was:

1) Do occupational self-efficacy, meaningfulness of the work, and work-related rumination function as independent mediating factors between transformational leadership and depressive symptoms among employees?

The second main aim of this work was to investigate the relationship between leadership and employee well-being from a person-centred perspective (Study II and IV). Specifically, acknowledging that the long-term development of work-related well-being is likely to differ between individuals, the aim was to identify latent classes (i.e. not pre-defined subgroups) of participants with similar mean levels and mean level changes in well-being (or in work-related rumination). Importantly, it was then possible to analyze the extent to which the participants in the latent well-being classes differed with regard to the levels and changes in leadership. The research questions related to the second main aim were:

2) From a leader-centred view, can the levels and changes in employee well-being be understood in terms of levels and changes in leadership?

3) From a follower-centric view, can the levels and changes in leadership be understood in terms of employee well-being?

4) Can the levels and long-term changes in work-related rumination be understood in terms of leadership and job demands?

The third main aim was to investigate the unique relevance or added value of transformational leadership as compared to fair leadership with regard to employee well-being (Study III). The research questions related to the third aim were:

5) Does transformational leadership explain work engagement over and above fair leadership?

6) Is a lack of fair leadership more conducive to employee exhaustion than a lack of transformational leadership is?

7) Considering the role of work characteristics in employee well-being, to what extent does leadership show an independent relationship to employee well-being?

## 3 METHODS

### 3.1 Participants and procedure

The data for this study were collected as part of an international research project entitled 'Rewarding and Sustainable Health-promoting Leadership (Re-Su-Lead)'. In the project, three-wave questionnaire data from employees and their leaders were collected in Finland, Sweden, and Germany in 2011–2013. The current study concerns Finnish employees who participated in the study. In the beginning of the project, four Finnish municipalities agreed to participate in the study, out of the nine municipalities that were invited to participate. The human resources staff of the municipalities recruited the participating work units. The invitation letter of the study informed the human resources personnel about the three criteria for participation. Our main criterion was that the participants worked in units that had a leader. In addition, we expected that the participating employees and leaders should have face to face contact at least once a week. Furthermore, we expressed our concern for including both women and men among participating employees and leaders.

Both online and postal questionnaires were used to gather the data, as not all the employees had a work e-mail address and access to a computer at work. The questionnaire was accompanied by a cover letter that provided information about the goals of the study and stated that participation was voluntary and confidential. The recipients were asked to assess work characteristics, a variety of leadership behaviours of their nearest superiors, and their own well-being. At T1, the employees returned the postal questionnaires to the researchers via their own leaders, who collected the questionnaires in closed envelopes. At T2 and T3, the questionnaires were posted directly to the researchers. Following questionnaire waves T1 and T2, the participating cities received written feedback reports including descriptive results on the levels of well-being, a range of psychosocial work characteristics, and leadership concerning their work units.

The first wave (T1) data were collected in the early spring of 2011, the second wave (T2) about 14 months later, in the late spring of 2012, and the third wave (T3) in the beginning of 2013, about 8 months after T2. The time lags between the measurements were determined mainly on the basis of the schedule related to the

intervention programme that was conducted in Sweden and Germany. Moreover, investigating different time lags responded to the need to gain knowledge on the relationships between leadership and employee well-being in varying time frames. This relates to the fact that as yet it is unknown what would be an appropriate time lag for the effects of leadership on employee well-being to unfold (Kelloway & Francis, 2013; Mitchell & James, 2001).

In total, 628 municipal employees from a variety of occupations participated in the study. At T1, questionnaires were successfully sent to 891 employees, and 557 of them returned the completed questionnaire after two reminders, yielding a response rate of 62.5%. Of the T1 participants, 47.2% continued participation at T2. At T2, new employees were additionally eligible to participate in the study (71 new employees entered the study, out of the 154 invited) and non-respondents from T1 were re-invited to participate, yielding an overall response rate of 36.1% ( $N = 333$ ) for T2. At T3, only former participants were invited to participate, and the resulting response rate was 52.9% ( $N = 294$ ). Altogether, 189 employees participated across all three waves.

During the study period, the role of three participants was changed from a subordinate to that of a supervisor, as it turned out that they had employees who rated them as their supervisor. Given the variety of organizational units in the study, we considered it important that the employees themselves determined who the immediate superior was with whom they interacted the most, and thereby, who is the supervisor to be evaluated. The rated leaders needed to be identified for the study purposes, so the participants were asked to give the name of the supervisor being rated. The majority of the leaders (60%–67%) that were rated in this study were foremen or superiors with only staff in a non-leading position reporting to them, whereas 25%–33% were managers in the middle level, and only a few ( $n = 3$ –4) were managers on the highest level.

Table 1 presents the background characteristics of the participants in the parts of the sample that were used in this work. Study I and III were based on cross-sectional samples and Study II on the complete longitudinal data, whereas the sample in Study IV comprised all the participants who had responded to any of the three consecutive questionnaires. Hence, the total sample of the Study IV consisted of the 554 participants from T1 and 71 new participants from T2. Between the measurement times T1–T2, T2–T3, and T1–T3 there were respectively 262, 225, and 258 longitudinal participants.

**Table 1.** Sample characteristics.

	Study I T1 Cross-sectional		Study II T1-T2 Longitudinal		Study III T2 Cross-sectional		Study IV T1-T2-T3 Longitudinal	
	<i>N</i>	% <sup>1)</sup>	<i>N</i>	%	<i>N</i>	%	<i>N</i> <sup>3)</sup>	%
	557	100	262	100	333	100	625	100
Gender								
Women	472	84.7	230	87.8	290	87.1	531	85.0
Men	85	15.3	32	12.2	43	12.9	94	15.0
Age <i>M</i> ( <i>SD</i> )	48.3 (9.72)		48.5 (9.09)		48.5 (9.75)		48.7 (10.0)	
<i>N</i> of participants								
≤ 35 years	58	10.6	23	8.8	36	10.9	65	10.5
35-49 years	219	39.9	104	40.0	118	35.6	233	37.8
≥ 50 years	272	49.5	133	51.2	177	53.5	319	51.7
Education <sup>2)</sup>								
Low	290	52.9	129	49.8	155	46.8	311	50.2
Middle	126	23.0	71	27.4	106	32.0	163	26.3
High	132	24.1	59	22.8	70	21.1	145	23.4
Working hours in a week <i>M</i> ( <i>SD</i> )	37.7 (4.87)		38.05 (4.09)		37.9 (4.97)			
≤ 40 hours	452	90.2	216	89.3	282	93.1		
> 40 hours	49	9.8	26	10.7	26	6.9		
Employment contract								
Permanent	523	94.7	250	96.2	310	93.4		
Temporary	29	5.3	10	3.8	22	6.6		
Work time arrangement								
Regular day shift	436	78.7	215	83.0	275	82.6		
Other	118	21.3	44	17.0	58	17.4		
Living with a partner								
Yes	418	75.5	199	76.2	257	77.4		
No	136	24.5	62	23.8	75	22.6		
Children at home								
Yes	276	49.8	133	51.0	146	55.6		
No	278	50.2	128	49.0	183	44.4		

**Note.** <sup>1)</sup> Percentages were calculated from available data in the given sample for each variable. <sup>2)</sup> Education: *Low* = upper secondary degree or below (vocational qualifications or matriculation examination), *Middle* = Bachelor's degree or equivalent vocational qualifications, *High* = At least master's degree. <sup>3)</sup> There is no common measurement point when all the 625 participants, the overall sample, would have given information. Therefore, the table presents those basic background factors of the sample that were either stable in this data (gender) or could be reliably inferred from information given in another measurement point (age and education). Age was calculated for the year 2012 (T2),

and for education, the highest values were included in case the participants indicated that their education level had changed.

In general, the sample comprised more women than men, as was the case also in the eligible work units (for details, see section 3.1.2. Sample attrition). In all, the participants worked in diverse occupations. Considering the 625 participants of Study IV, the participants worked most typically in child care (21.1%), teaching (20.6%), institutional cleaning (19.5%), institutional catering (11.5%), property maintenance (7.4%), and nursing and assistance (7.0%). In addition, some employees worked in other fields (12.9 %) such as secretary, administrative, and social work. The proportions of occupations were roughly the same in different parts of the data that were used in this work. An exception was that in the T1–T2 longitudinal sample, the proportion of child care workers was particularly high (27.5%).

### 3.2 Sample attrition

Concerning non-respondents at baseline (T1), we had information only about their gender. The proportion of women was slightly higher in the sample (84.7%) as compared to the population in the participating work units (80.7%),  $\chi^2(1) = 6.08, p = .014$ . Respondents who continued participation at T2 ( $n = 262$ ) did not differ from those who discontinued participation ( $n = 292$ ) at T2 with respect to any of the study variables at T1, or in terms of gender or age. However, employees in the middle range of education (i.e. above comprehensive school but below master's level degrees) were slightly more likely to take part in the study at T2 than were employees with lower or higher educational backgrounds,  $\chi^2(3) = 8.21, p = .042$ . This relates to the educational background in the actively participating work units. For example, the proportion of child care workers increased in the longitudinal data as kindergartens actively continued to participate in the study.

Attrition between T2 and T3 was examined by comparing T2 values between those who continued participation at T3 ( $n = 225$ ) and those who dropped out ( $n = 108$ ) at T3 (independent of participation at T1). The analysis revealed that participants who dropped out at T3 were more exhausted at T2 ( $M = 2.48$  vs.  $M = 1.93$ ),  $U = 8924.50, p < .001$ . In addition, they were slightly younger than were those who continued participation at T3 ( $M = 46.77$  vs.  $M = 49.36$ ),  $t(173.23) = -2.11, p = .036$ . There were no differences in other study variables, gender, or education level.

Furthermore, attrition between T1 and T3 was examined in a similar way by comparing T1 values between those who responded ( $n = 258$ ) and those who did

not respond ( $n = 296$ ) at T3 (independent of responding at T2). Those who continued participation at T3 reported initially slightly more favourable values on transformational leadership ( $M = 3.23$  vs.  $M = 3.05$ ),  $t(544.91) = -2.38$ ,  $p = .018$  and conflict management ( $M = 3.87$  vs.  $M = 3.60$ ),  $U = 43536.00$ ,  $p = .001$  than the drop-outs did. With respect to background variables, respondents at T3 were older ( $M = 49.19$  vs.  $M = 47.34$ ),  $t(539.02) = -2.26$ ,  $p = .025$  than non-respondents were. Additionally, sample attrition between T1 and T3 can be partly attributed to expired work contracts, as drop-outs more often than respondents had a fixed-term work contract,  $\chi^2(1) = 8.06$ ,  $p = .005$ .

To summarize, women initially tended to participate more actively in this study. Importantly, the T1–T2 data seemed to be free of attrition-related bias concerning all the study variables. Considering the longer timeframe and attrition at T3, older and less exhausted employees were somewhat more likely to continue in the study. Furthermore, lowest scores on transformational leadership and conflict management may be underrepresented in the sample involving the T3 measurement.

### 3.3 Measures

In this section, I briefly describe the measures used in Study I–IV with examples of items. Statistical information related to the measures is reported in the original publications (including the measurement models of the latent variables in Study I and III). Reliability coefficients (Cronbach's alphas) of the sum variables are presented in Table 3.

#### 3.3.1 Leadership

In Study I–IV, *transformational leadership* was measured using the Global Transformational Leadership Scale (Carless, Wearing, & Mann, 2000) that comprises seven items (e.g. 'My immediate superior instils pride and respect in others and inspires me by being highly competent'). Responses were given on a scale ranging from 1 (to a very small extent) to 5 (to a very large extent).

In Study II, *authentic leadership* was assessed with the 16-item Authentic Leadership Questionnaire (Walumbwa et al., 2008) consisting of four subscales: self-awareness, relational transparency, balanced processing of information, and internalized moral perspective. The rating scale ranged from 0 (not at all) to 4 (frequently, if not always).



As Mindgarden holds the copyright for the authentic leadership measure, examples of the items are not provided here.

In Study III, *fair leadership* was assessed with five items describing the justice behaviours of supervisors. Two of the items ('Does your immediate superior treat the workers fairly and equally?' and 'Does your immediate superior distribute the work fairly and impartially?') were derived from the QPS Nordic questionnaire (Dallner et al., 2000). These items were rated on a scale ranging from 1 (very seldom or never) to 5 (very often or always). In addition, three statements from the health-promoting leadership scale (Vincent, 2012) were used: 'My immediate superior judges my performance justly and fairly', '... favours certain workers' (reversed) and '... criticizes in an unfair way' (reversed). Responses were given on a scale ranging from 1 (strongly disagree) to 5 (strongly disagree). In Study IV, supervisor fairness was measured using only the two items from the QPS Nordic questionnaire (Dallner et al., 2000).

In Study II and IV, *abusive supervision* was measured using five items that describe active-aggressive interpersonal abuse by the supervisor (e.g. 'My nearest superior puts me down in front of others'). The factors reflecting active-aggressive and passive-aggressive forms of abusive supervision were discerned by Mitchell and Ambrose (2007) on the basis of the scale that was originally developed by Tepper (2000). The items were rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree).

In Study IV, *conflict management* was measured with three items from the health-promoting leadership scale (Vincent, 2012). The items (e.g. 'My immediate superior searches for solutions to conflicts with those involved') were rated on a scale ranging from 1 (strongly disagree) to 5 (strongly disagree).

Considering that the study participants evaluated a certain person, the nearest supervisor, it was relevant to examine the extent to which the measures of leadership were affected by a change of the supervisor between measurements. Stability coefficients (correlations between measurements) for the leadership constructs are presented in Table 2. The table shows that when the leader did not change between the measurements, the stability coefficients were consistently higher. In addition, the coefficients were somewhat higher in the short time lag (T2–T3) as compared to the longer time frames (T1–T2 and T1–T3). Stabilities of similar size have been reported in earlier studies that have specified that the participants rated the same leaders across time (see Introduction section).

**Table 2.** Stabilities (test-retest correlations) of leadership when the same or different supervisor is rated on subsequent measurements.

Leadership measure	T1-T2 (14 months)		T2-T3 (8 months)		T1-T3 (22 months)	
	Same supervisor ( <i>n</i> = 210)	Different supervisor ( <i>n</i> = 52)	Same supervisor ( <i>n</i> = 206)	Different supervisor ( <i>n</i> = 19)	Same supervisor ( <i>n</i> = 213)	Different supervisor ( <i>n</i> = 45)
Transformational leadership	.67***	.17	.74***	.60**	.63***	.43**
Authentic leadership	.74***	.25	.80***	.40	.70***	.30*
Conflict management	.62***	.18	.71***	.33	.67***	.26
Supervisor fairness	.63***	.31*	.71***	.41	.65***	-.09
Abusive supervision	.61***	.15	.62***	-.03	.65***	.25

\*  $p < .05$ , \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### 3.3.2 Well-being and related personal resources

In Study II, III and IV, *job exhaustion* was measured using three items (e.g. ‘I feel burned out from my work’) from the 5-item exhaustion subscale in the Finnish version of the Maslach Burnout Inventory (Kalimo, Hakanen, & Toppinen-Tanner, 2006; Maslach, Jackson, & Leiter, 1996). Responses were given on a scale ranging from 0 (never) to 6 (every day). The three items that were selected for this study particularly reflect work-related exhaustion, and they have been successfully used in previous studies (e.g. Kinnunen, Mäkikangas, Mauno, De Cuyper, & De Witte, 2014).

In Study III, *work engagement* was assessed with six items from the abridged Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006) that was validated in Finland by Seppälä et al. (2009). Three of the items measured vigour (e.g. ‘At my work, I feel that I am bursting with energy’) and three measured dedication (e.g. ‘I am proud of the work that I do’). In Study II, *vigour* was measured using the three-item vigour scale. The items were rated on a scale ranging from 0 (never) to 6 (every day).

In Study I, *depressive symptoms* were measured using the Major Depression Inventory (MDI) which was clinically validated by Bech et al. (2001). The measure

consists of 12 questions concerning the two last weeks (e.g. ‘How much of the time have you felt low in spirits or sad?’). Concerning two specific pairs of items (being restless or subdued, and having reduced or increased appetite), only the higher value was counted within the total score or, in this case, only this item was set to load on the latent factor of depressive symptoms. The responses were given a scale ranging from 0 (at no time) to 5 (all the time).

Aside from well-being, in Study I and IV, *work-related rumination* was assessed with three items (following the original German items): ‘I have difficulty relaxing after work’, ‘Even at home, I often have to think about my problems at work’, and ‘Even on a holiday, I sometimes must think about my problems at work’ (Mohr, Müller, Rigotti, Aycan, & Tschan, 2006). The rating scale ranged from 1 (strongly disagree) to 7 (strongly agree).

In Study I, *personal resources* referred to occupational self-efficacy, meaningfulness of the work, and (lack of) work-related rumination (introduced above). *Occupational self-efficacy* was assessed using six items (e.g. ‘I can remain calm when facing difficulties in my job because I can rely on my abilities’) from Rigotti et al. (2008). The items were rated on a scale ranging from 1 (totally disagree) to 7 (totally agree). *Meaningfulness of the work* was assessed using three items (e.g. ‘Do you feel that the work you do is important?’) from the Copenhagen Psychosocial Questionnaire (COPSOQ II; Pejtersen et al., 2010). The rating scale ranged from 1 (to a very small extent) to 5 (to a very large extent).

### 3.3.3 Work characteristics

In Study III, the following measures were used to assess *job resources*. *Autonomy* was measured using four items on decision latitude (e.g. ‘I can plan my own work’) with respect to planning work, ways of doing work, and choosing job assignments (Guest, Isaksson, & De Witte, 2010). The items were rated on a scale ranging from 1 (very seldom or never) to 5 (very often or always). Further, *role clarity* was measured using three items (e.g. ‘Does your work have clear objectives?’) from the COPSOQ II (Pejtersen et al., 2010). The rating scale ranged from 1 (to a very small extent) to 5 (to a very large extent).

In Study IV, *job demands* were assessed using the following measures. *Workload* was measured with the 5-item Quantitative Workload Inventory (Spector & Jex, 1998) pertaining to the amount of work in terms of pace and volume (e.g. ‘How often does your job require you to work very fast?’). The items were rated on a scale

ranging from 1 (very seldom or never) to 5 (very often or always). *Cognitive demands* were measured using four items (e.g. ‘Does your work require you to make complex decisions?’) from the COPSOQ II (Pejtersen et al., 2010). The response scale ranged from 1 (very seldom or never) to 5 (very often or always). *Emotional demands* were likewise assessed with four items (e.g. ‘Does your work put you in emotionally disturbing situations?’) from the COPSOQ II (Pejtersen et al., 2010). For two of the items, the responses were given on a scale ranging from 1 (very seldom or never) to 5 (very often or always), and for two other items, on a scale ranging from 1 (to a very small extent) to 5 (to a very large extent).

### 3.4 Statistical analyses

The primary analysis methods are outlined in this section. The analysis methods and parts of the data that were used in each of the four studies are summarized in Table 3. A more detailed description of the analysis methods can be found in the original publications.

In Study I, a multiple mediator model was examined using structural equation modelling (SEM). Full and partial mediation models were compared with the scaled Satorra-Bentler chi-square difference test. In addition to the five latent variables (of which three were mediating variables), two categorical control variables (as observed variables) were added to the final full mediation model. An indirect effect was quantified as the product of its constituent paths, and to determine the significance of the indirect effects, bootstrapping estimates with 95% confidence intervals were used for each of the mediators. Bootstrapping is a resampling procedure that is specifically recommended for testing indirect effects (Hayes, 2009).

In Study II and IV, factor mixture modelling (FMM) was applied to identify subgroups (i.e. latent classes) of individuals on the basis of mean levels and mean level changes in well-being. Latent classes refer to latent subpopulations in the data that are not known beforehand but that can be extracted with various mixture modelling techniques. In mixture modelling, latent class membership is indicated by a latent categorical variable that is fitted to the data (Lubke & Muthén, 2005). In both studies, the observed sum scores of well-being (or work-related rumination) measures served as dependent variables in the mixture analyses. In Study II, the analysis was based on the mean values of vigour and exhaustion in the two-wave data, and in Study IV, it was based on the mean values of work-related rumination

in the three-wave data. In both studies, a common factor of repeated measurements was specified to model the individual variation in the level of well-being.

Furthermore, the mixture analyses were followed by analyses that aimed to examine the extent to which the latent classes differed in leadership (Study II and IV) and other factors (job demands and exhaustion in Study IV). The differences were examined between classes (level) and within classes (changes). In Study II, multivariate general linear model (GLM) analysis for repeated measures was utilized for this purpose, using SPSS (version 21). In addition, a one-way analysis of variance (ANOVA) was used to examine the differences between the latent classes at both measurement times.

In Study IV, differences between the latent classes were investigated utilizing the most recently recommended BCH method for distal variables in the Mplus programme (Asparouhov & Muthén, 2014). This approach correctly treats class membership as a latent, not observed, variable and thereby takes into account the probability of belonging to a certain class (Clark & Muthén, 2011). Differences between the classes were examined using the maximum sample size at the beginning and at the end of the study period (T1 and T3). Furthermore, within-class changes across time were examined using change scores of the distal variables in three time lags (T1–T2, T2–T3, and T1–T3). This analysis included only those participants that had responded at the both measurement points in question. Change scores for each time lag were calculated by extracting the earlier mean (e.g. mean at T1) from the later mean (e.g. mean at T2).

In Study III, the objective was to investigate the unique relationships of transformational and fair leadership to employee well-being. To overcome the problem of multicollinearity, Cholesky decomposition was used (de Jong, 1999). This made it possible to enter the predictors in a pre-specified order, similar to a fixed-order regression analysis. Cholesky regression analyses were performed with latent variables in SEM. One-tailed tests for p-values were used in this connection. Moreover, given the clustered structure of the data (employees rated shared leaders), the analysis option for a complex sample in Mplus was used (type = complex). This procedure corrects standard errors and the chi-square test of model fit that are affected by the non-independence of observations (Muthén & Muthén, 1998–2012).

In sum, each of the four studies utilized latent variables. In Study I and III, structural models were examined, whereas in Study II and IV, latent categorical variable was utilized to identify latent classes of participants. These analyses were conducted in the Mplus program versions 5.2, 7.11, and 7.3 (Muthén & Muthén, 1998–2012). In Study I–IV, the method of estimation was maximum likelihood with

robust standard errors (MLR). An exception was the bootstrapping analysis in Study I, which was not compatible with MLR; therefore, the maximum likelihood (ML) estimation was used. In MLR, missing data are handled through full information maximum likelihood (FIML), which enables the use of all available information without imputing values. Concerning decisions that were made prior to the analyses on longitudinal data, Study II included all the employees who participated at both T1 and T2, and Study IV comprised all the participants who had completed one or several of the consecutive three questionnaires.

**Table 3.** Summary of the Studies I–IV: Data, research aims, main variables, and methods.

	<b>Study I</b>	<b>Study II</b>	<b>Study III</b>	<b>Study IV</b>
<b>Design and data</b>	Cross-sectional ( <i>N</i> = 557)	Longitudinal, 2 waves Mean time lag 14 months ( <i>N</i> = 262)	Cross-sectional ( <i>N</i> = 333)	Longitudinal, 3 waves Mean time lags 14, 8, and 22 months (total <i>N</i> = 625; T1 <i>N</i> = 554, T2 <i>N</i> = 333, T3 <i>N</i> = 294)
<b>Research aims</b>	To examine the unique mediating role of three psychological factors (personal resources of employees) in the relationship between transformational leadership and depressive symptoms among employees	To identify latent classes of employees with similar development of vigour and exhaustion across 14 months To examine how the latent classes differ in leadership over time	To investigate the unique contributions of transformational and fair leadership on employee work engagement and exhaustion	To identify latent classes of employees with similar development of work-related rumination across 22 months To investigate how the latent classes differ in job demands, leadership and exhaustion over time
<b>Main variables</b>	<u>Leadership:</u> transformational leadership $\alpha = .91$ <u>Well-being:</u> depressive symptoms $\alpha = .90$ <u>Personal resources:</u> occupational self-efficacy $\alpha = .79$ meaningfulness of the work $\alpha = .80$ work-related rumination $\alpha = .78$	<u>Leadership:</u> transformational leadership $\alpha = .90$ authentic leadership $\alpha = .94$ abusive supervision $\alpha = .91$ <u>Well-being:</u> vigour $\alpha = .87-.88$ exhaustion $\alpha = .87-.83$ (jointly as a basis for latent classes)	<u>Leadership:</u> transformational leadership $\alpha = .90$ fair leadership $\alpha = .88$ <u>Well-being:</u> work engagement (vigour, dedication) $\alpha = .92$ exhaustion $\alpha = .82$ <u>Work characteristics:</u> workload $\alpha = .83$ autonomy $\alpha = .81$ role clarity $\alpha = .78$	<u>Leadership:</u> transformational leadership $\alpha = .90-.91$ conflict management $\alpha = .79-.80$ supervisor fairness $r = .79-.86$ abusive supervision $\alpha = .90-.92$ <u>Well-being:</u> work-related rumination (as a basis for latent classes) $\alpha = .77-.81$ exhaustion $\alpha = .82-.85$ <u>Work characteristics:</u> workload $\alpha = .83$ cognitive demands $\alpha = .84-.85$ emotional demands $\alpha = .84-.86$
<b>Method</b>	Multiple mediator model with latent variables (SEM)	Factor mixture modeling (on sum scores), multivariate GLM for repeated measures	SEM with latent variables, Cholesky decomposition, adjustment for clustered sample (type=complex)	Factor mixture modeling (on sum scores), BCH method for distal variables

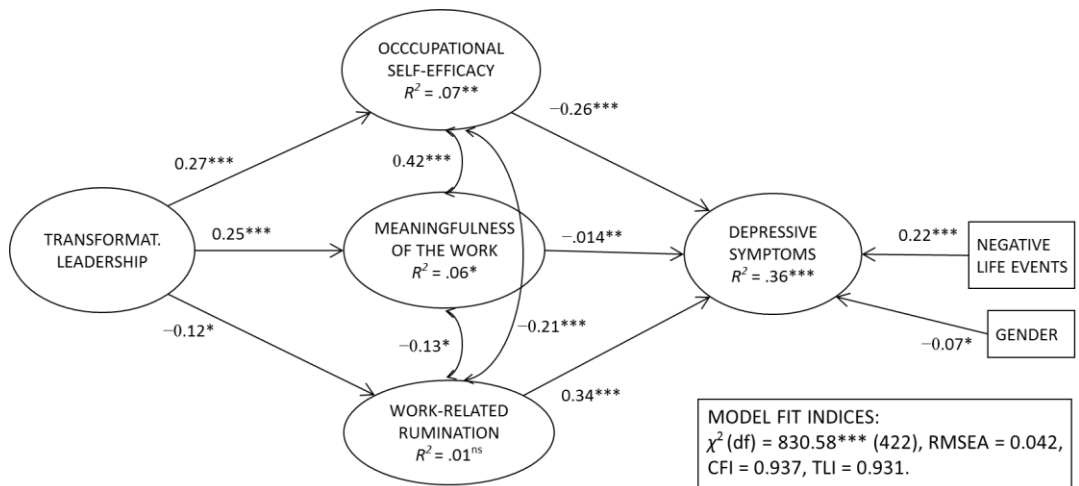
## 4 OVERVIEW OF THE RESULTS

### 4.1 STUDY I: Psychological mediating factors

The aim of Study I was to investigate the mediating role of occupational self-efficacy, perceived meaningfulness of the work, and (low-level) work-related rumination in the relationship between transformational leadership and depressive symptoms among employees. More precisely, the purpose was to examine the unique contributions of these psychological factors in the multiple mediator model. Specifically, it was hypothesized that transformational leadership is positively related to employees' occupational self-efficacy beliefs and perceived meaningfulness of the work, and negatively related to work-related rumination (Hypotheses 1 a–c). Further, it was hypothesized that occupational self-efficacy and perceived meaningfulness of the work are negatively related to depressive symptoms, and that work-related rumination is positively related to depressive symptoms (Hypotheses 2 a–c). In addition, Hypothesis 3 concerned specifically on the mediating (indirect) effects of these psychological factors.

The results based on SEM supported the hypothesized regression paths between transformational leadership and the mediators (Hypotheses 1 a–c) as well as between the mediators and depressive symptoms (Hypotheses 2 a–c). In addition, Hypothesis 3 on the mediation (indirect effects) gained support. More elaborately, specific indirect effects were significant for each of the three mediators. Thus, each of the mediators made a unique contribution to the relationship between transformational leadership and depressive symptoms. The indirect effects were determined in regard to the final full mediation model (without a direct path from transformational leadership to depressive symptoms), that also included gender and negative life events as significant covariates for depressive symptoms (women and those participants who had experienced negative life events during the last year reported higher levels of depressive symptoms). The model explained 36% of the variance in depressive symptoms and is presented in Figure 1.





**Figure 1.** The mediator model with standardized regression paths.

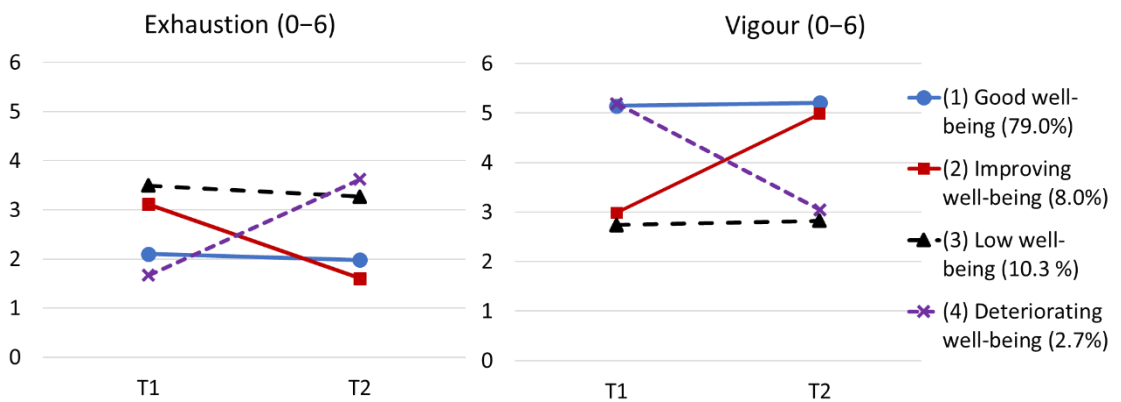
**Note.** Gender was coded 0 = woman, 1 = man. Negative life events were coded 0 = none, 1 = one or several. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## 4.2 STUDY II: Congruence of well-being and perceived leadership

Overall, the purpose of Study II was to examine leadership and employee well-being longitudinally, from a person-centred approach. Specifically, the first aim was to identify homogenous latent classes (a priori unknown subgroups) of employees that showed similar mean levels and mean level changes in occupational well-being (vigour and exhaustion) across 14 months. The second aim was to examine the extent to which the employees in the latent well-being classes differed in their ratings of transformational, authentic, and abusive leadership behaviours of their nearest supervisors over time.

Concerning the first aim, it was expected that a large proportion of the sample would display good occupational well-being and ill-being would concern a minority of the sample. Further, it was expected that classes showing stable levels of well-being would include a majority of the employees and distinct changes would occur only in rather small classes. The results based on FMM on sum scores of vigour and exhaustion indicated four latent classes shown in Figure 2. The classes demonstrated *Good* ( $n = 207$ , 79%), *Low* ( $n = 28$ , 10%), *Improving* ( $n = 21$ , 8%), and *Deteriorating* ( $n = 7$ , 3%) well-being (class counts based on the most likely latent class). Thus,

majority of the participants experienced high vigour and relatively low exhaustion at both measurement points. Partly in contrast with the expectations on stability, a slight increase in vigour occurred in the majority class of *Good well-being*. As expected, distinct changes occurred in small latent classes, namely in the *Improving* and *Deteriorating well-being* classes, that demonstrated opposite changes in well-being. A further atypical pattern of well-being was indicated by the class of stable ill-being (*Low well-being*), that demonstrated vigour below the (sample) mean level and exhaustion above the (sample) mean level at both measurements. In sum, the expectations concerning the first aim were predominantly confirmed by the results.



**Figure 2.** Latent classes of well-being (exhaustion and vigour) across a time lag of 14 months.

Regarding the second aim, it was hypothesized that employees displaying good well-being in terms of high vigour and low exhaustion would report more favourable leadership ratings (i.e. higher transformational and authentic leadership, and lower abusive supervision), as compared to employees displaying ill-being in terms of low vigour and high exhaustion. In addition, it was tentatively expected that distinct changes in well-being would be associated with concurrent changes in perceived leadership. These hypotheses were mostly supported. The results showed, firstly, that the development of the leadership ratings differed between the four well-being classes. The *Improving well-being* class demonstrated significant increases in transformational and authentic leadership behaviours and a significant decrease in abusive supervision across time. Opposite changes in leadership ratings were observed in the *Deteriorating well-being* class, although the changes were not statistically significant in this class of seven participants. Furthermore, in the majority class of *Good well-being*, transformational leadership increased significantly.

Secondly, the latent well-being classes differed in the levels of leadership, as assumed. The *Good well-being* class reported transformational and authentic leadership behaviours at a higher level than participants in the *Low well-being* class did, at both measurement points. In addition, when well-being in each of the small change classes was at its lowest, participants in these classes reported less transformational leadership compared to the *Good well-being* class. Contrary to expectations, however, abusive supervision did not differ between the latent well-being classes. In this regard, it should be noted that most of the study participants did not experience abusive supervision at all. In sum, the hypotheses concerning the second aim were supported for the most part.

### 4.3 STUDY III: The relative importance of transformational and fair leadership

The overarching purpose of Study III was to examine the unique (independent) contributions of transformational and fair leadership to work engagement and exhaustion among employees. In this purpose, the contribution of each type of leadership behaviour was examined independent of the other leadership behaviour, and in addition, independent from work characteristics. First, it was expected that transformational leadership is positively related to work engagement after controlling for fair leadership (Hypothesis 1). Second, it was expected that fair leadership is negatively related to exhaustion after controlling for transformational leadership (Hypothesis 2). Third, it was assumed that transformational leadership is positively related to work engagement after controlling for role clarity and autonomy (Hypothesis 3). Fourth, fair leadership was similarly expected to be positively related to work engagement after controlling for role clarity and autonomy (Hypothesis 4). Fifth, it was expected that fair leadership is negatively related to exhaustion after controlling for workload, role clarity, and autonomy (Hypothesis 5).

The results from the Cholesky regression models showed that transformational leadership did not explain incremental variance in work engagement beyond fair leadership. Thus, Hypothesis 1 was refuted. However, fair leadership was (negatively) related to exhaustion beyond the (negative) relationship between transformational leadership and exhaustion, thereby supporting Hypothesis 2. Taking into account the role of work characteristics in well-being, the results demonstrated that both transformational and fair leadership explained an additional 2% of variance in work engagement after the share of role clarity and autonomy had

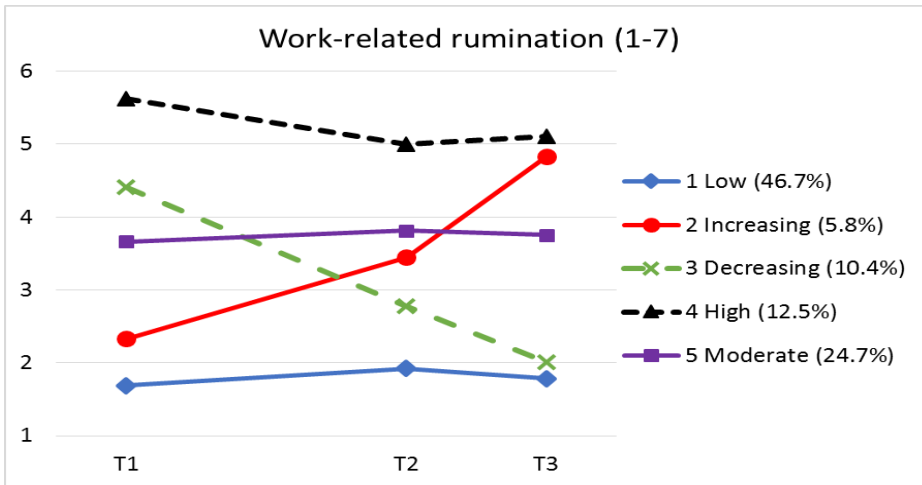
been partialled out. Thus, Hypothesis 3 and 4 were supported. Furthermore, (un)fair leadership contributed to a 6% improvement in the explained variance of exhaustion after workload was partialled out, thereby supporting Hypothesis 5. Unexpectedly, role clarity and autonomy were not significantly related to exhaustion.

#### 4.4 STUDY IV: Long-term profiles of work-related rumination

The purpose of Study IV was to investigate the long-term development of work-related rumination and its assumed antecedents and consequences from a person-centred approach. The study had three aims. The first one was to identify latent classes of participants that were similar within the classes and different between the classes with respect to the development of work-related rumination (WRR) during a time frame of 22 months. The second aim was to investigate the extent to which the participants in the varying WRR classes differed in terms of job demands and leadership (antecedents) across time. The third aim was to examine the extent to which the WRR classes differed across time in terms of exhaustion (consequence).

Concerning the first aim, the results revealed five latent classes that indicated *Low* ( $n = 291, 46.7\%$ ), *Increasing* ( $n = 36, 5.8\%$ ), *Decreasing* ( $n = 65, 10.4\%$ ), *High* ( $n = 77, 12.5\%$ ), and *Moderate* ( $n = 154, 24.7\%$ ) levels of work-related rumination (class counts based on posterior probabilities). The WRR classes are shown in Figure 3. While majority of the participants fell into stable WRR classes, salient changes across the whole study period were found for a minority of the participants in the *Increasing* and *Decreasing* WRR classes. In these classes, the same change trend continued from T1–T2 further to T2–T3. However, significant changes in WRR were found in all the classes across the first time span (14 months in average), except for the *Moderate* class, which was the only fully stable class.

In regard to the second aim, it was expected that employees high in work-related rumination would show generally higher levels of quantitative, cognitive, and emotional job demands as compared to employees low in WRR (Hypothesis 1). Hypothesis 1 received strong support, as participants in the higher WRR classes consistently reported higher levels of quantitative, cognitive, and emotional job demands than participants in the lower WRR classes did. In addition, in the *Decreasing* class, all job demands decreased T1–T3 in accordance with declining work-related rumination.



**Figure 3.** Latent classes of work-related rumination across a time frame of 22 months.

Moreover, it was expected that employees low in work-related rumination would show a favourable pattern of leadership behaviours, referring to higher levels in transformational leadership, supervisor fairness, and conflict management, and lower levels of abusive supervision, as compared to employees high in WRR (Hypothesis 2). Hypothesis 2 was supported as the participants in the lower WRR classes reported more favourable leadership behaviours than the participants in the higher WRR classes did. The differences were most pronounced in supervisor fairness and abusive supervision. Concerning changes, leadership behaviours were more stable within the WRR classes than job demands. However, in the *Increasing* WRR class, abusive supervision increased T1–T2 and transformational leadership decreased T2–T3. In addition, in the *Low* WRR class, transformational leadership increased T1–T3, which could be convincingly attributed to the change of the leader between the measurements.

Concerning the third aim, it was expected that employees who reported constantly high levels of work-related rumination would display particularly high levels of exhaustion (Hypothesis 3). The hypothesis gained strong support as participants in higher WRR classes reported consistently higher exhaustion levels than participants in the lower WRR classes, and the differences were salient. Except for between-person differences, notable within-person changes were also found, that were congruent with changes in work-related rumination. In particular, in the *Increasing* and *Decreasing* WRR classes, exhaustion increased and decreased, respectively, in congruence with work-related rumination in the longer time frames of T1–T2 and T1–T3.

## 5 DISCUSSION

The overarching purpose of this work was to investigate the relationship between leadership and employee well-being from a psychological perspective. Overall, the work was guided by the JD-R model (Bakker & Demerouti, 2007) and the COR theory (Hobfoll, 1989, 2001). Furthermore, when examining work-related rumination, several theoretical models pertaining to the deleterious influence of hindered recovery (Meijman & Mulder, 1998; Sonnentag & Fritz, 2015) and mental representations of stressors (Brosschot et al., 2006) were utilized. The relationship between leadership and employee well-being was examined cross-sectionally using a variable-centred approach, and longitudinally from a person-centred perspective. After summarizing the main findings, I discuss the results in more detail with reference to their theoretical implications. Finally, I offer suggestions for future research as well as practice.

### 5.1 Summary of the main findings

First, Study I specified psychological factors that mediate the relationship between (lack of) transformational leadership and depressive symptoms among employees, namely occupational self-efficacy, perceived meaningfulness of the work, and (low-level) work-related rumination. These mediating factors were considered as personal resources for employees that leaders could support and enhance. The results supported the independent mediating role for each of the resources. Thus, each of the mediators brought their own contribution to the relationship when taking into account gender and negative life events that also contributed to depressive symptoms. This finding underlines the unique importance of each of these personal resources as mediating factors.

Second, the results of Study II revealed that occupational well-being and perceived leadership behaviours demonstrate congruence with regard to levels and changes in well-being (vigour and exhaustion). The result on congruence was based on identification of four distinct latent classes (a priori unknown subgroups) of participants demonstrating different levels and development of occupational well-

being in a time frame of 14 months, with two measurement points. A large majority of the participants belonged to the class of *Good well-being* ( $n = 207, 79.0\%$ ), which was relatively low in exhaustion and relatively high in vigour. In addition, in the *Good well-being* class, there was a slight increase in vigour, and as the subsequent analysis showed, a slight increase in transformational leadership. The *Improving well-being* ( $n = 21, 8.0\%$ ) and *Deteriorating well-being* ( $n = 7, 2.7\%$ ) classes were small classes with salient changes in well-being. The *Improving well-being* class reported increases in transformational and authentic leadership behaviours and a decrease in abusive supervision, in congruence with increasing vigour and decreasing exhaustion. Correspondingly, the *Deteriorating well-being* class reported opposite changes in leadership behaviours though these were statistically nonsignificant ( $n = 7$ ). Concerning differences in the levels of leadership, at both measurement points the participants in the *Low well-being* class ( $n = 27, 10.3\%$ ) reported less transformational and authentic leadership behaviours than participants in the *Good well-being* class. Further, when well-being was at its lowest in the small change classes (*Improving well-being* and *Deteriorating well-being*), the participants in these classes reported less transformational leadership behaviours as compared to those in the *Good well-being* class.

Third, the results of Study III demonstrated that fair leadership explained work engagement equally well as compared to transformational leadership. In addition, (un)fair leadership showed a unique relationship to exhaustion, beyond that of (low) transformational leadership. Both transformational and fair leadership retained a relationship to well-being that was independent of work characteristics. Without work characteristics, leadership explained 9–10% of the variance in well-being, whereas the unique (i.e. independent from the analysed work characteristics) contribution of leadership was 2–6% of the variance in well-being, being highest in the relationship between unfair leadership and exhaustion.

Fourth, Study IV revealed five latent classes of participants that exhibited different levels and across-time development of work-related rumination across a time span of 22 months, with three measurement points. The classes were meaningfully associated with leadership, job demands, and exhaustion. Among a half of the study participants ( $n = 291, 46.7\%$ ), work-related rumination remained at a low level across the three measurements. In contrast, chronically unfavourable levels of work-related rumination were found in the *Moderate* ( $n = 154, 24.7\%$ ) and *High* ( $n = 77, 12.5\%$ ) classes, whereas the *Increasing* ( $n = 36, 5.8\%$ ) and *Decreasing* ( $n = 65, 10.4\%$ ) WRR classes showed clear change trends that continued throughout the entire study period of nearly two years. Slight changes in work-related rumination

also occurred in the other classes, except for the *Moderate* WRR class, which was the only entirely stable class across the three measurement times.

Participants in the higher WRR classes consistently reported higher levels of quantitative, cognitive, and emotional job demands. Furthermore, in the *Decreasing* WRR class, job demands decreased simultaneously with decreasing work-related rumination in the time frame of nearly two years. Concerning leadership, participants in the higher WRR classes reported lower levels of supervisor fairness, lower conflict management, and higher abusive supervision as compared to the participants in the lower WRR classes. The differences between the classes were less salient for transformational leadership, whereas the changes in leadership within the classes concerned transformational leadership and additionally abusive supervision. Moreover, a considerable congruence of work-related rumination and exhaustion was found, which not only concerned between-person differences but also within-person changes. Particularly, in the lengthiest time lag, exhaustion increased and decreased, respectively, in the *Increasing* and *Decreasing* WRR classes.

## 5.2 The mediating role of psychological factors

The results on the mediating factors between transformational leadership and depressive symptoms emphasize the role of employees' work-related personal resources as the link between leadership behaviours and employee psychological health. Personal resources are, in essence, aspects of the self that are generally linked to resiliency (Hobfoll et al., 2003). Thus, the results of the current study are in line with the extended JD-R model, proposing that job resources, such as leadership, enhance employees' personal resources, that further foster their well-being (Bakker & Demerouti, 2007; Xanthopoulou et al., 2007). This is also consistent with one of the core principles of the COR theory, the accumulation of resource gains and losses (Hobfoll, 2001). It is noteworthy and of importance to the present results that in the COR theory, resource loss is disproportionately more significant in impact than resource gain (Hobfoll, 2001). Depressive symptoms indicate the depletion of psychological resources generally in an individual's life, and thereby a resource loss process. The findings of this study are supportive of the notion that leaders play a role in that process by influencing the work-related personal resources that either hinder or contribute to the process.

Self-efficacy, referring to a sense of mastery and competence, may be the most studied among personal resources across various contexts (Hobfoll, 2003).



Additionally, according to the Self-Determination theory, a sense of competence enhances mental health and motivation, along with autonomy and social relatedness (Ryan & Deci, 2000). In occupational health psychology, the role of lowered efficacy beliefs in work-related psychological health has been elucidated particularly in the literature on occupational burnout (Maslach et al., 2001). Feelings of inefficacy, or decreased sense of personal accomplishment, is characteristic to occupational burnout, a psychological syndrome that, especially in serious forms, shows a large overlap with depressive symptoms (Ahola et al., 2005; Ahola et al., 2014; see Bianchi, Schonfeld, & Laurent, 2015, for a review). Thus, occupational self-efficacy is a focal factor related to an individual's occupational health and one that leaders can support, as the results of the present study suggest.

Concerning leadership, the notion of transformational leadership supporting employee self-efficacy derives directly from transformational leadership theory (Bass, 1985; Yukl, 1989). In essence, inspirational motivation involves building confidence in the followers' sense of ability, while simultaneously expressing high expectations (Bass, 1985; Yukl, 1989). The importance of leaders expressing both these, that is, the expectations and the confidence that the followers can meet the expectations, has been highlighted particularly by House (1977) in his theory of charismatic leadership (as cited in Yukl, 1989, and in Podsakoff, 1990), that is one of the predecessors of Bass's conceptualization of transformational leadership.

In regard to the second mediator, the notion of experienced meaningfulness among employees is in a pervasive way present in the transformational leadership theory (Bass, 1985). Transformational leaders essentially increase awareness of the importance and value of the work and activate higher order-needs of the followers (Yukl, 1989). That meaningfulness drives motivation is a notion that is also consistent with the work characteristics model by Hackman and Oldham (1976), and beyond the occupational domain, in keeping with the model of sense of coherence by Antonovsky (1987). Although the transformational leadership theory centres on motivation and performance (Bass, 1985; Yukl, 1989), increased meaningfulness of the work also relates to better well-being (Arnold et al., 2007; Clausen & Borg, 2011; Ghadi et al., 2013). The ability to derive meaning from one's work is known to deteriorate in occupational burnout, which involves a cynical and detached response to the job (Maslach et al., 2001). Furthermore, cynicism relates to impaired mental health, such as depression (Demerouti et al., 2010). Accordingly, in the current work, meaningfulness was conceptualized as reflecting the job incumbent's personal resources in relation to the work rather than external working conditions. This is consistent with the view that meaningfulness of the work refers to subjective

experience, and it locates between the aspects of the work and the individual (Cartwright & Holmes, 2006; Clausen & Borg, 2011). As Cartwright & Holmes (2006, 202) put it, 'Meaning represents the inter-relationship between the internal world of the individual and external context of the workplace.'

Drawing on the JD-R model, in burnout research it has been suggested that cynicism (disengagement) develops particularly in response to a lack of job resources, such as lack of resourceful leadership (Bakker & Demerouti, 2007; Demerouti et al., 2001; Schaufeli & Bakker, 2004). In accordance with that, the results of the current study lend support to the notion that leaders have the potential to enhance the meaningfulness of the work (Cartwright & Holmes, 2006), which in turn supports employee mental health and lowers the risk for depressive symptoms. These results are in accordance with several earlier studies that have found a positive relationship between transformational leadership and the meaningfulness of the work among employees (Ghadi et al., 2013; Nielsen et al., 2008; Nielsen & Daniels, 2012).

Regarding the third mediator examined, work-related rumination refers to recurrent and obtrusive work-related thoughts during off-job time and can be conceptualized as a cognitive representation of a work-related stressor (Brosschot et al., 2006). Work-related rumination is a response to distress that implies decreased personal resources and inability to detach oneself from stressful work-related issues during off-job time. In occupational health psychology, an increasing number of studies have demonstrated the importance of psychological detachment from work (see Sonnentag & Fritz, 2015; Wendsche & Lohmann-Heischl, 2017, for reviews). In particular, work-related rumination can be seen to contribute to ill-being by hindering the energy restoration process. Decreased energy is characteristic of both depression and occupational burnout (Bianchi et al., 2015; Schaufeli & Buunk, 1996). The findings of this study indicate that transformational leadership shows the potential to diminish unnecessary and stressful work-related thoughts during off-job time, and can thereby decrease the risk for depressive symptoms.

In all, the results lend support for the view that transformational leadership behaviours help to prevent depressive symptoms among employees through enhancing occupational self-efficacy and the meaningfulness of the work, and decreasing work-related rumination. Thus, these leaders psychologically convey to their employees that they (employees) are capable to meet the expectations and they are doing meaningful work, that, however, can be left aside during off-job time.

### 5.3 Person-centred view on employee well-being and leadership

A specific contribution of this study was to examine leadership and employee well-being longitudinally from a person-centred perspective. In the person-centred approach, the focus is on the individual and on patterns of operating factors as an undivided whole (Bergman et al., 2003; Bergman & Lundh, 2015; Bergman & Trost, 2006). Without utilizing the person-centred approach, this study would not have been able to recognize different developments of occupational well-being and leadership for different participants, and particularly, the congruence of well-being and leadership would have gone unnoticed.

By investigating latent subpopulations in the sample, this study was able to show that the congruence of well-being and perceived leadership concerned not only differences between people, but also within-person changes. That is, when well-being improved or deteriorated, leadership improved or deteriorated as well. Thus, the results of this study strongly suggest that leadership, as perceived by employees, and an individual employee's well-being, are tightly interwoven phenomena. Although causality remains an open issue, the finding of congruence would not be plausibly interpreted from a merely leader-centric view which assumes that it is the actual leader behaviours that drive the changes in employee well-being (Uhl-Bien et al., 2014). Instead, a follower-centric perspective is also needed to explain why the perceptions of leadership and well-being are so tightly coupled. In fact, this view is not new, as it has long been known that there is more to employee ratings on leadership than the actual leader behaviours (for a review, see Hansbrough et al., 2015).

Particularly the findings concerning the small classes with salient changes in well-being support the follower-centric view and thereby occupational well-being (energy) as the primary resource for an employee (Meier & Gross, 2015; Zijlstra et al., 2014; Zohar, Tzischinski, & Epstein, 2003). In these classes, all the leadership evaluations changed in congruence with changes in well-being. Further, it is important to note that in the *Improving well-being* class, transformational leadership increased and abusive supervision decreased significantly even when the participants whose leader changed between the measurements were excluded from the analysis. Considering these leadership constructs, they can be seen to involve particularly affective content, even though each with different valence. Affective item content potentially elicits more affect-based and mood-congruent processing on the leadership evaluation task (Hansbrough et al., 2015; Schwarz, 1990). It is also evident that the same leaders can

change their behaviours over time, but this may not be the most plausible explanation when it comes to changes from abusive behaviours to transformational behaviours across one year. At the same time, it should be remembered that the small change classes showing the salient congruence effect comprised only about 10% of the participants. However, when taking into account the majority class of *Good well-being*, which also displayed a simultaneous increase in vigour and transformational leadership, the finding on congruence appears considerably more prevalent.

From the leader-centric perspective, the differences in transformational and authentic leadership between the well-being classes can be seen to indicate how these leadership characteristics act as job resources by sustaining vigour and preventing exhaustion among employees. Participants in the *Good well-being* class consistently displayed higher levels of transformational and authentic leadership as compared to the participants in the *Low well-being* class. These findings are in accordance with previous variable-oriented studies that have reported positive relationships between transformational (Arnold & Connelly, 2013; Ghadi et al., 2013; Hetland et al., 2007; Tims et al., 2011) or authentic leadership and employee well-being (Bamford et al., 2013; Laschinger & Fida, 2014; Laschinger et al., 2013).

Concerning sustained well-being as high vigour and low exhaustion, the inspirational and stimulating aspects of transformational leadership energize employees and promote their willingness to invest effort in the work. Theoretically the impact of authentic leadership is assumed to partly differ from that of transformational leadership, although the influence of both can be seen to relate to the healthy experiences of meaningfulness and sense of self-worth among employees (Cartwright & Holmes, 2006; Gardner et al., 2005). The effect of authentic leaders on followers has been seen to base particularly on aspects of self-awareness and self-regulation that the leaders foster in themselves and in their followers (Gardner et al., 2005). Authentic leaders act in accordance with their true values, build up relationships characterized by mutual trust and openness, and encourage the followers to express their deep thoughts (Gardner et al., 2005). When actualized, the authentic behaviours are likely to facilitate employees' intrinsic motivation and mental resilience as job resources in accordance with the JD-R model (Schaufeli & Bakker, 2004). For the majority of the participants in the present study, leadership seemed to fulfil its function as a job resource, while for those for whom it did not, vigour remained constantly lower and exhaustion higher.

Interestingly, work-related rumination did not demonstrate similar congruence with leadership as well-being (vigour and exhaustion) did. Although there were clear

differences in leadership between the classes of work-related rumination, leadership typically did not change even if work-related rumination increased or decreased. Thus, perceptions of leadership seem to change particularly in congruence with the energy level of the individual, that is, vigour and exhaustion. Energy is more closely related to mental health than the attitudinal identification dimension of occupational well-being consisting of dedication and cynicism (Demerouti et al., 2010). The close connection between energy and mental health fosters the view that affective factors, such as mood, related to the energy level of an individual may colour his/her perceptions of leadership. This follower-centric interpretation would be consistent with the effect of mood congruence on evaluation tasks that is well-documented in experimental research (Clore & Martin, 2012; Fiske & Taylor, 2013; Schwarz, 1990). Similarly, in occupational health psychology, findings on reversed longitudinal relationships between work characteristics and employee health are considered to indicate rosy and gloomy perceptions among healthy and unhealthy employees (de Lange et al., 2004; de Lange et al., 2005).

Beyond coloured evaluations and in a more substantial sense, it is also possible that employee well-being actually influences the leadership behaviours that the employee encounters. Thus, leader behaviour may change in reaction to the level of an employee's well-being, as well-being is likely to modify an individual's social behaviours, interactional reactivity, and the mental resources required to respond to the demands of the work (Nielsen et al., 2008; van Dierendonck et al., 2004). In accordance with this, a daily diary study demonstrated how employees when being more exhausted were also more reactive and engaged in retaliatory behaviours after facing incivility from supervisors (Meier & Gross, 2015). There is also neuropsychological evidence on the effects of job burnout on emotional processing. Individuals with job burnout displayed faster involuntary reactions to negative emotional speech sounds and slower reactions to positive ones, as compared to a healthy control group (Sokka et al., 2014).

Altogether, these findings corroborate the view that leadership and employee well-being are intertwined in a way that makes it difficult to disentangle the causes and consequences. Leadership affects employee well-being through employee perceptions in social interaction, and this interaction is also affected by the characteristics of the employee, such as the level of energy and affective state. When one operating factor of a phenomenon is changed, the other factors also change. This is consistent with the person-centred research paradigm that acknowledges this interdependence and considers the operating factors as a larger whole (Bergman & Lundh, 2015; Bergman & Trost, 2006), without making ungrounded causal claims

(Antonakis, Bendahan, Jacquart, & Lalive, 2010). In sum, losing resources in the form of energy depletion, an individual is more likely to lose also other resources, such as supporting social relationships at work, which is consistent with the notion of loss cycles in the COR theory (Hobfoll, 2001).

## 5.4 Person-centred view to work-related rumination as a response to distress

In recent years, several theoretical models have focused on the role of stressful thoughts that prolong the affective and physiological activation related to the stressors of life in general (Brosschot et al., 2006; Ottaviani et al., 2016) or to working life in particular (Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2015). Related to this development, work-related rumination has proved to be an interesting concept in occupational health psychology. Using the person-centred approach, the current study showed that in a time span of nearly two years, the participants in the higher WRR classes had higher quantitative, emotional, and cognitive job demands, which is consistent with the stressor-detachment model; high job demands complicate the process of getting psychological distance to the work (Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2015).

Furthermore, the findings specifically emphasized the role of the qualitative job demands in work-related rumination. Although all job demands were higher in the higher WRR classes, the differences were most pronounced in emotional demands. Altogether, it seems to be difficult to stop processing and leave aside emotional and cognitive stressors after work. An interesting finding related to this was that the participants in the *High* and *Moderate* WRR classes had a higher educational level, typically master's degree, than the participants in the *Low* WRR class, who typically had vocational qualifications. Prior research has similarly documented a positive correlation between socio-economic status or educational level and work-related rumination, even using population-based samples (Cropley & Zijlstra, 2011; Van Laethem et al., 2015). Altogether, these findings suggest that the type of job or job complexity plays a role in work-related rumination. Specifically, the finding on the role of cognitive demands for work-related rumination is of importance with respect to gaining knowledge on the specific strain reactions of today's working life, that sets demands particularly on the information processing capacity of employees (Stenfors, Magnusson Hanson, Oxenstierna, Theorell, & Nilsson, 2013).

It is interesting to consider the socioeconomic or educational differences in work-related rumination in the light of the data from the Finnish Quality of Work Life Survey. These data show that upper white-collar employees in Finland report more work-related thinking on off-job time than employees in other socio-economic groups (Lehto & Sutela, 2014). This socio-economic difference seems to concern both thoughts about interesting work tasks as well as distress about work on off-job time. While it is clear that not all work-related thoughts are stressful, the current study focused on such thoughts on work-related problems that are, by definition, unintentional and difficult to eliminate (Martin & Tesser, 1996). These thoughts seem to co-occur with a difficulty to relax (Mohr et al., 2006; Syrek et al., 2017). In particular, negative repetitive thoughts are less controllable than positive repetitive thoughts (Segerstrom, Stanton, Alden, & Shortridge, 2003). Thus, a psychologically healthy relationship to work can be characterized by voluntary control whether to think or not to think about work on off-job time. In a less healthy relationship, work-related thoughts are less controllable, persistent, and associated with negative affect (Syrek et al., 2017).

According to the JD-R model, job-related resources counterbalance the detrimental effects of job demands (Bakker & Demerouti, 2007), which reflects the role of available resources in times of loss in the more general COR theory (Hobfoll, 2001). Particularly supervisor fairness, and additionally conflict management, functioned as job resources for the participants in the lower classes of work-related rumination and shielded them from the strain reactions indicated by work-related rumination. Instead, abusive supervision as a job demand, requiring additional psychological effort from employees, was higher among participants in the higher WRR classes. It seems relevant to note that both supervisor fairness and abusive supervision, which were the leadership behaviours that most clearly differed between the WRR classes, centre around respect in the treatment of employees. In organizational justice literature, respectful treatment is considered as an indicator of interpersonal justice, and it has been shown to be associated with burnout and stress in a meta-analysis (Robbins et al., 2012), as well as prospectively associated with deteriorating mental health (Ferrie et al., 2006; Ndjaboué et al., 2012) and sickness absences (Elovainio et al., 2013; Kivimäki et al., 2003).

Moreover, an interesting finding was the close relationship between work-related rumination and exhaustion. Exhaustion, referring to the low level of energy an individual has available, was expected to reflect the consequences of impeded recovery and energy restoration in accordance with the models on the detrimental effects of poor recovery (Meijman & Mulder, 1998; Sonnentag & Fritz, 2015; Zijlstra

et al., 2014). However, exhaustion was found to a notable degree vary in congruence with work-related rumination between and within persons. Therefore, from a person-centred perspective, perseverant, stressful work-related thoughts and energy depletion can be considered as inextricably interwoven components of the same process that concerns impairment of psychological well-being (Bergman & Lundh, 2015; Bergman & Trost, 2006). According to the COR theory, this is essentially a process of resource loss in terms of energy depletion and failure to restore energetic resources, which work-related rumination further consumes. Thus, exhaustion may not only be the consequence of work-related rumination, but also an integral part of the intrapersonal condition in which ruminative thoughts emerge (Watkins, 2008).

In particular, with limited energy resources, it becomes more difficult to attain work-related goals, and particularly, this discrepancy in goal attainment is conducive to ruminative thoughts (Martin & Tesser, 1996; Watkins, 2008). The notion that work-related rumination is intertwined with the energy condition of an individual is fully supported by two earlier studies. First, fatigue and work-related rumination were found to decrease simultaneously after an intervention on work-related rumination (Querstret, Cropley, Kruger, & Heron, 2016). Second, in a vacation study, work-related rumination decreased during the vacation, when people regained their energies, and stayed at a lower level even two weeks after the vacation (de Bloom, Radstaak, & Geurts, 2014). Besides compulsive workers, the results also applied to employees who had a more healthy relationship to the work.

In all, the findings of this study particularly highlighted the role of work-related factors and exhaustion in work-related rumination, and thereby drew attention to the type and nature of rumination that work-related rumination represents (Watkins, 2008). An extensive review that comprised various forms of repetitive thought concluded that the control theory framework (Carver & Scheier, 1982), adopted to rumination originally by Martin and Tesser (1996), provides the best account for repetitive thought processes (Watkins, 2008). As stated, the core in this model is that rumination follows from an unresolved discrepancy in the attainment of personally relevant goals. The goal concept, in this context, can be understood broadly, referring generally to the desired state that differs from the actual state, and it may concern the internal or external context of an individual (Watkins, 2008).

Although rumination is often associated with depression, it is important to note that the concept of depressive rumination in the Response Styles theory by Nolen-Hoeksema is defined in a rather specific way as rumination over the depression itself (Johnson & Whisman, 2013; Nolen-Hoeksema et al., 2008). In contrast, the content of the ruminative thoughts in work-related rumination relates to work. Thus, there



might be unnecessary confusion with the theoretical background and the narrow definition of depressive rumination in the Response Styles theory, and unintentional, conscious, recurrent, intrusive thoughts (Martin & Tesser, 1996) on work-related issues (Brossschot et al., 2006; Van Laethem et al., 2015), which can be considered as cognitive representations of stressors (Brossschot et al., 2006, Ottaviani et al., 2016).

Furthermore, the findings on educational differences in work-related rumination mentioned above support the presence of a conceptual difference between work-related rumination and depressive rumination. This is further substantiated by the lack of gender-based differences in work-related rumination. Although it is well-documented that women show more depressive rumination than men do (see Johnson & Whisman, 2013, for a meta-analysis), in the current study there was no gender difference between the latent classes of work-related rumination (nor in the whole sample of 625 employees, out of which 94 were men). Though our sample comprised few men, several other studies (Flaxman et al., 2012), even those using large-scale population-based samples (e.g. Croyley & Zijlstra, 2011; Van Laethem et al., 2015), indicate no gender differences in work-related rumination. To conclude, on the basis of the theoretical background and the empirical findings of the present study, work-related rumination should be seen as a response to work-related stress that is closely associated with exhaustion and energy depletion.

## 5.5 The importance of supervisor fairness for employee well-being

The findings of this work, concerning both Study III and IV, raise justice behaviours of supervisors to the foreground in regard to employee well-being. From a person-centred longitudinal perspective, supervisor fairness was found to be the most efficient aspect of leadership to prevent work-related rumination. Correspondingly, supervisor unfairness and abusive supervision, both referring to disrespectful treatment of employees, were the leadership behaviours that most often triggered perseverant thoughts. The variable-centred approach comparing the unique contributions of transformational and fair leadership led to a similar conclusion, that is, fair leadership is the most important aspect of leadership to prevent employee well-being from deteriorating. Considering the results of Study III and IV together, it can be seen that unfairness and abusive supervision turn into real stressors more

easily, whereas the mere lack of resourceful aspects of leadership does not seem to be as detrimental as the stressful aspects of leadership are.

Accordingly, the finding on the crucial role of supervisor fairness can be seen to reflect a focal difference between fairness and other resourceful aspects of leadership; it is difficult to think about lack of fairness without thinking about unfairness. Unfairness, in turn, seems to pose a specific stressor for employees (Greenberg, 2010; Ford & Huang, 2014). Considering unfairness as a stressor and the JD-R model, it becomes important to distinguish those job demands that play a motivating role and serve the developmental needs of employees from those demands that drain energy and play only a detrimental role (Crawford et al., 2010; Van den Broeck et al., 2010). The key difference between these two types of demands is that responding to challenge demands pays off as rewards in the future, whereas coping with hindrance demands requires effort but does not pay back. The hindrance type of job demands particularly drains energy and evokes negative emotions (Crawford et al., 2010). Therefore, hindrance demands are particularly compatible with the notion of resource loss in the COR theory, and resource loss plays a primary role in health impairment (Hobfoll, 2001). In this study, supervisor unfairness was considered to constitute a hindrance type of demand for employees. The pivotal role of fairness tempts to consider some job resources as being important in a crucial way: lack of these fundamental resources turns into hindrances. In addition to supervisor fairness, also role clarity may function this way (Crawford et al., 2010; Lee & Ashforth, 1996; Örtqvist & Wincent, 2006; Zapf et al., 2014).

Considering the psychological influence mechanism of injustice, Ford and Huang (2014) proposed that organizational unfairness provokes threat appraisals that may concern an employee's trust in the organization and in the supervisor, a threat to self-worth, or a threat to the basic need for morality. Moral emotions, such as anger, disgust, and contempt (Weiss, 1999), may be distressing, and they may contribute to the health influences of injustice. All the suggested mechanisms of injustice seem relevant considering the current results on supervisor unfairness and abusive supervision in the higher WRR classes.

In accordance with the perseverative cognition hypothesis (Brosschot et al., 2006), the experience of unfairness may be relived through perseverative thoughts about the issue, which prolongs the negative affect and psychophysiological activation related to it, thereby depleting energy and exacerbating the unhealthy effects of injustice. Regarding physiological activation, the effect of perseverative cognitions on prolonged cardiovascular activation has been demonstrated, for example, in two hourly diary studies (Brosschot et al., 2007; Pieper, Brosschot, van

der Leeden, & Thayer, 2010). In the work place context, also sleep, fulfilling a major restorative function, may suffer from injustice (Greenberg, 2006; Greenberg, 2010). The role of fair treatment by a supervisor for employee recovery (sleep) was emphasized by the results of the epidemiological Finnish Public Sector study (Lallukka et al., 2017). In a nested cohort design, unfavourable changes in interpersonal justice were associated with the onset of insomnia symptoms and, similarly, favourable changes in interpersonal justice were associated with decreased insomnia symptoms.

Considering supervisor fairness from a follower-centric view, it seems logical that fairness evaluations are also susceptible to the impact of employee affect (Barsky & Kaplan, 2007; Hansbrough et al., 2015; van den Bos, 2003). In the current study, abusive supervision was also found to change in a congruent way with well-being within the small latent classes that demonstrated clearly improving or deteriorating well-being. However, there is evidence for the impact of justice from stronger study designs than cross-sectional self-report surveys. More precisely, there are longitudinal epidemiological studies measuring objective health outcomes (e.g. Elovainio et al., 2006; Juvani et al., 2016; Kivimäki et al., 2003, Kivimäki et al., 2005), or utilizing co-worker (work-unit mean) ratings of supervisor-related justice (Elovainio et al., 2013; Moliner et al., 2005). Group-level relationships between supervisor-related injustice and psychological distress among employees have also been demonstrated in a multilevel analysis (Way et al., 2014). Furthermore, there are intervention studies (Greenberg, 2006; Skarlicki & Latham, 1997), and the effect of injustice on negative emotions has also been demonstrated experimentally (Weiss, 1999).

Moreover, concerning the current study, in an additional analysis of the data of Study II (not shown in the results of Study II), I found that the interaction effect for supervisor fairness (2 items) was not significant, in contrast to the other leadership evaluations that indicated significant congruence with well-being.

## **5.6 Rethinking the role of transformational leadership in relation to employee well-being**

This work also examined the added value of transformational leadership for employee well-being. As several leadership concepts were examined in this work, the relations between transformational leadership and employee well-being shown in several earlier studies (Arnold & Connelly, 2013; Skakon et al., 2010) could be set

into a broader perspective. In particular, the role of transformational leadership for employee well-being was compared with that of fair leadership (Study III). The results indicated no additive effects of transformational leadership for positive well-being and additionally suggest that lack of transformational leadership is not as detrimental to employee well-being as unfair leadership. Additionally, the findings concerning the latent classes of work-related rumination (Study IV) are consistent with the conclusion that other aspects of leadership are more important to prevent ill-being. Thus, the results from Study I and IV provide two different views on the relationship between transformational leadership and work-related rumination. Overall, despite the theoretical appeal of the transformational leadership theory, the results of this work questioned the unique role of transformational leadership in employee well-being and highlight the need to locate transformational leadership in the context of other aspects of leadership.

Moreover, the observations of this study suggest that there seems to be something peculiar in the relationship between transformational leadership and employee well-being. In spite of the high correlations between the leadership concepts (e.g. transformational and authentic leadership in Study II, T1  $r = .86$ , T2  $r = .88$ ), particularly transformational leadership changed within the classes of occupational well-being (Study II) and work-related rumination (Study IV). On the basis of the results of Study II, it is evident that transformational leadership changes more clearly with changes in employee well-being than other leadership behaviours do. From a follower-centric perspective, transformational leadership items are rather abstract while simultaneously being clearly positive and desirable, which may elicit more affect-based and heuristic information processing on the part of the raters (Brown & Keeping, 2005; Fiske & Taylor, 2013; Schwarz, 1990). In support of the role of the affective state, a recent study on sleep deprivation demonstrated in a controlled experimental design that a positive affective state is needed on the part of the followers to perceive charisma or the idealized influence component of transformational leadership (Barnes, Guarana, Nauman & Kong, 2016).

As the findings indicated that the same level of well-being can be attained with more elementary aspects of leadership, that is, leader fairness, it seems reasonable to reconsider the role of transformational leadership in employee well-being. With reference to parsimony, it is not insignificant that the transformational leadership theory is a rather large theoretical ensemble that involves a considerable amount of theoretical assumptions. The central characteristic that differentiates transformational leadership from other leadership styles is the transformation of followers, i.e. changing the basic values, beliefs, and attitudes of followers (Bass,

1985; Yukl, 1989; Podsakoff et al., 1990). In contrast, positive behaviours such as encouragement, recognition, and praise are not unique to transformational leadership.

Although studies comparing leadership styles are not common, there is some evidence indicating that similar results to those of transformational leadership can be attained with particularly rewarding behaviours of leaders. For example, the meta-analysis by Judge and Piccolo (2004) showed that contingent reward behaviours of transactional leadership, that is, clarifying expectations and providing rewards for meeting the expectations, explained employee motivation to the same extent as did transformational leadership. It is noteworthy that similar results have been reported in an experimental study with respect to performance on a stressful task (Lyons & Schneider, 2009). In that study, participants who were instructed by a leader that displayed contingent reward behaviours performed equally well on a stressful arithmetic task as compared to participants that were guided by a transformational leader. For the benefit of transformational leadership, it should be noted, however, that the participants in the transformational leadership condition reported more perceived social support than the participants in the contingent reward condition.

Aside from transformational leadership, the importance of recognition and rewards from leaders has been shown, for example, in relation to lowered risk for heart disease (Nyberg, 2009) and chronic fatigue (Eriksen, 2009). Furthermore, in an experimental study (De Cremer et al., 2005), the combination of procedural justice and rewarding behaviours of leaders yielded the most favourable outcome in terms of employee self-worth. Additionally, these results shed light on the observation of the current work, that fair evaluation of performance plays an important role in employee well-being. The centrality of rewarding leadership for employee well-being is in accordance with the Effort-Reward Imbalance model that focuses on reciprocity in social exchange and posits that investing high effort at work without gaining adequate reward (money, esteem, social status) is particularly stressful (Siegrist, 1996).

The present work concentrated on employee well-being as the criterion, but from a more general view, the transformational leadership theory has been criticized on several grounds. Besides lack of conceptual clarity (Bryman, 1992; Northouse, 2004; van Knippenberg & Sitkin, 2013; Yukl, 1999), one of the issues raised pertains to undefined values. Values play a central role in the transformational leadership theory, but they are vaguely defined. This leaves room for abuse, as transformational leadership concerns changing followers' values and showing them new directions (Northouse, 2004; Yukl, 1989). This is not insignificant with regard to practical

implications from research on transformational leadership and employee well-being. Interestingly, in the data used in the current work, the item ‘is clear about his/her values and practices what he/she preaches’ showed a considerably low factor loading (.33) on transformational leadership, potentially indicating the ambiguity relating to undefined values.

Another central issue in the critique pertains to levels of leadership, which also concerns the current work. The concept of transformational leadership originates from interviews of senior leaders (Alimo-Metcalfe, 2013; Northouse, 2004), and although recent years have generated an abundance of quantitative studies focusing on supervisory leaders in lower levels of the organization, it is still pertinent to ask whether transformational leadership can truly be exerted in the lower levels of organizational hierarchies. It is evident that leaders in all the levels can be encouraging and praise good work, but it is difficult to see how the aspects that are more specific to transformational leadership, especially creating an attractive vision, are realized by supervisors without executive power. Further, there are several supervisors and lower-level managers in an organization. Thus, transformational leadership may be applicable to the leadership *of* organizations, but not necessarily to leadership *in* organizations (Bryman, 1992; Northouse, 2004). What Bryman (1992) noted 25 years ago seems to be still relevant today; very little discussion has arisen about how an organization would be pulled together if it contains a plethora of transformational leaders, each pursuing their personal visions.

## 5.7 A general view of the role of leadership in employee well-being

Concerning the independent role of leadership, this study found that transformational and fair leadership retained significant relationships to work engagement and exhaustion beyond work characteristics. However, the role of work characteristics in employee well-being cannot be overstated as, for example, autonomy and role clarity explained 25% of the variance in work engagement, and workload explained 17–18% of the variance in exhaustion in this study. Fair leadership contributed to a 6% improvement in the explanation rate of exhaustion after workload, and both transformational and fair leadership (interchangeably) explained an additional 2% of the variance in work engagement after role clarity and autonomy were controlled. In sum, despite the notable role of work characteristics,

it was shown that the relationship between leadership and employee well-being is not redundant to them.

Given that transformational and fair leadership explained work engagement equally well, the findings support a more general role of supervisors that is independent from other job resources. The independent role of leadership, in general, may relate to the social exchange in the relationship between a leader and a follower, such as trust and support in many forms (e.g. Colquitt et al., 2013; Kelloway et al., 2012). However, it is worth noting that in Study III, one-tailed significance testing was used. With two-tailed tests, fair leadership would have retained a significant relationship with work engagement above role clarity and autonomy, while transformational leadership would not, which further supports the importance of fair leadership for positive well-being.

Considering the implications of the present work, it is important to pay attention to the role of work units and shared leaders among employees. One important observation in this study was that shared leaders within work units indeed unified the perceptions of leadership, but they did not unify perceptions of well-being. More precisely, even 32% and 21% of the variance in transformational and fair leadership, respectively, was explained by the shared leader as a rating target (at T2). At T1, the corresponding proportions were 27% and 24% (supervisor fairness consisting only of the two items). These intraclass correlations are similar to those observed in other studies (Elovainio et al., 2013; Kelloway et al., 2012; Moliner et al., 2005; Nielsen & Daniels, 2012). In our data, despite the relatively high proportions of group level variance in leadership, well-being was found to vary only on the individual level. It is evident that this observation casts doubt on the leader-centric view, which proposes that leaders who act in certain ways enhance the levels of well-being among their employees.

Thus, in light of the data used in the present study, the relations between leadership and employee well-being are based on the individual differences in the leadership perceptions and well-being, not on differences between work units having different leaders. At the same time, these observations paradoxically demonstrate that perceptions of leadership are not merely a function of employee well-being, as there was group level variance in leadership even in the absence of group level variance in well-being. Furthermore, the differences in stabilities when the supervisor stayed the same across time or, in comparison, changed, support the view that the person being rated matters for the leadership appraisals.

Further, the notably high empirical overlap between transformational leadership and fair leadership (Study III,  $r = .81$  for latent variables), as well as that between

transformational and authentic leadership (Study II, T1  $r = .86$ , T2  $r = .88$  for observed variables) evidently deserves more attention. High empirical overlap is inconsistent with the notion that these leadership concepts are theoretically distinct and refer to different content. One plausible explanation for the high empirical overlap derives from measurement and particularly affective issues in employees' leadership ratings (Brown & Keeping, 2005; Hansbrough et al., 2015; Rowold & Borgmann, 2014). Specifically, the affect experienced towards the leader may be used as a heuristic base for the evaluation (for a review, see Schwarz, 1990). Thus, the rather complex task of analyzing the behavioural characteristics of the leader may be simplified by using one's feelings about the target person as information in the evaluation task.

The notion of interpersonal affect in ratings of leadership is not new because interpersonal affect (liking) has indeed been shown to play a considerable role in ratings of transformational leadership (Brown & Keeping, 2005) and in several other concepts of leadership (Rowold & Borgmann, 2014). The effect of interpersonal affect on transformational leadership ratings would also explain why particularly transformational leadership increased among employees whose leader changed between the measurement times in the large *Low* WRR class (Study IV). In sum, interpersonal affect provides one potential explanation as to why theoretically different leadership styles become empirically hardly distinguishable in employee ratings. Implications of these observations and this chain of thought are considered when giving suggestions for future research.

## 5.8 Evaluating the limitations of the study

Besides its strengths, this study has also limitations that should be considered when evaluating the results. First, this study was based solely on self-reports and is thereby subject to the common source bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In search for objectivity, work characteristics could be analyzed by external raters (Rau et al., 2010), whereas objectivity in regard to leadership evaluation is a more complicated issue. The same leader can actually treat different employees in different ways. Therefore, in order to understand the role of leadership in employee well-being, it is necessary to examine the subjective experiences of employees. That these may not always reflect actual leader behaviours from a more objective point of view was considered in the current work within the follower-centric perspective. In addition, an attempt to gain a more objective view was made by paying attention to



the level of agreement among employees rating a shared leader and considering the changes of the supervisors between measurements. Further, regarding the limitations of self-reports, Study I and III were cross-sectional. As all the constructs are measured at the same time, a cross-sectional study is particularly susceptible to the common source bias (Podsakoff et al., 2003). Accordingly, in the cross-sectional Study I and III, it is possible that the observed relationships reflect only differences between individuals and their perceptions instead of any processes of influence driven by leadership.

A second major limitation of this study is that the sample characteristics limit the generalizability of the results. Most importantly, the sample consisted predominantly of women, reflecting the gender proportions in the participating work places with little increment to the proportion of women in the sample (e.g. at T1, 80.7% vs. 84.7%). Therefore, it is unclear to which extent the results apply to men. In addition, there was rather large variation in the tenure with the supervisor in the sample, and according to my knowledge on the participating work units, the frequency of face-to-face interactions between leaders and their employees also varied. These can be seen as side effects from the benefit of involving participants from a large range of occupations and different organizational structures. Further, this study concerned participants who were employed by municipalities, and it is not known whether supervisory leadership appears different or similar in the private sector.

Moreover, there was considerable attrition in the sample. Initially, women took part more actively in the study, and the other attributes of non-respondents at baseline were not known. Based on the attrition analyses, the T1–T2 sample was not biased with respect to the study variables, and the response rate of 47% for longitudinal participants did not seem to be particularly low compared to organizational studies in general (Baruch & Holtom, 2008). However, attrition in the sample should be taken into account, especially when considering the longer time frame and third measurement in Study IV, whereby dropped-out participants had previously been worse off in terms of exhaustion, transformational leadership, and conflict management.

As a third limitation of this study, shortened measures were used for transformational leadership, work engagement, and exhaustion. Concerning Study III, it is in principle possible that the relationship between transformational leadership and employee work engagement would have been more pronounced if the multifaceted Multifactor Leadership Questionnaire (MLQ) was used. In addition, the measure used in this study appears to stress the softer, supporting side of transformational leadership, ignoring particularly high performance expectations

(Podsakoff et al., 1990; Syrek & Antoni, 2014), and thereby leaving the picture of transformational leadership somewhat incomplete. However, using the one-dimensional, validated measure of transformational leadership (Carless et al., 2000) instead of the MLQ seems appropriate considering the high correlations between the subscales in the MLQ (Northouse, 2004), which has lead several researchers to combine the subscales into one dimension (Judge & Piccolo, 2004).

Concerning the measurement of work engagement and exhaustion, it was an enlightened decision to concentrate on the identification and energy dimensions of burnout and work engagement because these can be considered the core dimensions of occupational well-being (Demerouti et al., 2010; González-Romá et al., 2006). In regard to the identification dimension, previous research has suggested that dedication and cynicism represent the endpoints of the same construct (Demerouti et al., 2010). In accordance with that, only dedication was measured. Moreover, the measure of supervisor fairness comprised only two questions; one on respectful and equal treatment and the other on fair and equal distribution of work. Fair leadership (Study III), instead, included five items, two of which were statements about unfair behaviours. Future research may clarify whether a direct focus on unfair leader behaviours affects the results. In support of the use of shortened measures in general, survey length is a major concern in longitudinal studies, and there are high-quality studies showing that, in many cases, even single-item measures show acceptable validity (Fisher, Matthews, & Gibbons, 2016).

The fourth limitation concerns the strength of the results from a statistical point of view. As reported, the nested structure of the data (employees rating shared leaders within work units) was taken into account only in Study III (using the type = complex option on Mplus), where it was possible without losing other properties of the analytical approach. In this respect, it is good to remember that the nested data structure was reflected in the group level variances and ICC values for leadership but not in those for well-being. In Study II and IV, the basis for the latent classes was well-being or work-related rumination, not leadership. Further, the standard errors appeared to be only little affected by the nested data structure.

## 5.9 Suggestions for future research

Most importantly, future studies on leadership and employee well-being should utilize a wider range of study designs. These may involve within-person studies on

shorter and longer time frames, studies focusing on interaction records, designs that explicitly utilize changes of the supervisors, and multilevel studies based on shared experiences in work groups. Group-level effects would be particularly important for group-level implications of studies on leadership and employee well-being.

In search for improvement, it is relevant to note that the results and conclusions of longitudinal studies with prediction as the main aim are sensitive to the length of the time lag of the study (Kelloway & Francis, 2013; Mitchell & James, 2001; Podsakoff et al., 2003; Selig & Little, 2012). Therefore, descriptive knowledge on the nature of change in the phenomenon under study is necessary for determining the appropriate time lag (Kelloway & Francis, 2013; Selig & Little, 2012), and this might also be gathered through qualitative interviews (Spector & Meier, 2014).

In the current situation, the appropriate time frame for the effects of leadership on employee well-being to occur is unclear. If the effects appear in a few hours following interaction (Meier & Gross, 2015; Miner et al., 2005; Wager et al., 2003), it might be difficult for studies based on year-long time lags to demonstrate change in well-being that could be predicted by leadership. This is especially so because salient changes in well-being typically concern only a minority of participants in a sample, as shown by many studies (see Mäkikangas & Kinnunen, 2016, for a review on burnout) and also by the results of the present study. Multiple measurement waves with time lags of a few weeks or months could potentially better provide information about the predictive relationships than two measurements one year apart do.

Indeed, it has been suggested that cross-lagged panel studies should use much shorter time lags (less than one year) rather than what has been common in work and organizational psychology (Dormann & Griffin, 2015). Dormann and Griffin (2015) additionally encourage researchers to conduct a pilot study that could serve as a basis for calculating the optimal time lag in the meaning of maximum effects. In contrast, a review on time lags found that lagged effects on psychological strain increased up to three years before declining, thereby indicating that a longer, rather than shorter, than one-year time frame would be recommendable (Ford et al., 2014). However, in recent years, cross-lagged panel models (Selig & Little, 2012) have been critiqued with reference to the alternative direction of within-person analyses (Curran & Bauer, 2011; Hamaker et al., 2015) that are more compatible than between-person analyses with the aim of investigating psychological processes (Spector & Meier, 2014). Accordingly, to better understand intraindividual processes related to leadership, longitudinal data consisting of several measurements should be analyzed at a within-person level (see Syrek et al., 2017, for an example).

Moreover, leadership styles are, by definition, relatively stable constructs. As reported, empirical studies have also shown that if the supervisor does not change between the measurements, the stability coefficients for leadership are high (Tafvelin et al., 2011; van Dierendonck et al., 2004). This makes leadership topics less suitable for cross-lagged panel models (Hamaker et al., 2015). In this regard, change of the supervisor during the study period should not be ignored. Instead, longitudinal studies should better incorporate the length of the exposure, that is, the time span under the supervision of a certain leader, in the study design. Accordingly, in order to avoid measuring only the stabilized situation, it would be good if the study period started when the exposure started, that is, when an individual starts with a new leader or enters a new work place (Spector & Meier, 2014). Existing studies indicate that the tenure of the exposure plays a moderating role in the relationship between leadership and employee outcomes (Nyberg et al., 2009; Tafvelin, Hyvönen, & Westerberg, 2014).

Aside from leadership styles and large theories behind them, supervisor behaviours and employee reactions could be examined more from the viewpoint of interaction. In this regard, experience sampling methodologies seem to be an underutilized option in the study of leadership and employee well-being (Fisher & To, 2012; Meier & Gross, 2015; Miner et al., 2005). Instead of leadership styles and general statements of desirable attributes, researchers could more explicitly focus on supervisor behaviours, and in a more concrete way, ask the employees how they felt before and after certain leadership behaviours occurred. Earlier momentary experience sampling studies on affective experiences at work have found that particularly negative supervisor-related events have strong effects on employees (Miner et al., 2005) and that fewer positive emotions are experienced when interacting with supervisors as compared to other interaction partners (Bono, Foldes, Vinson, & Muros, 2007).

On a more substantive basis, it would be beneficial if future studies examined the role of affect and relationship qualities, such as trust, between leaders and employees, and how these develop across the tenure of the relationship. Both leader-centric and follower-centric perspectives would be relevant. In this regard, the cumulated literature on the Leader-Member Exchange (LMX) theory could be utilized (Gerstner & Day, 1997). In favour of this approach, a recent meta-analytic review on leadership and employee stress emphasized the role of relational constructs like leader-member exchange for employee well-being (Harms, Credé, Tynan, Leon, & Jeung, 2017). Moreover, affective consequences of injustice seem an important avenue for future research (Colquitt et al., 2013; Ford & Huang, 2014). Specifically,

the finding on the link between justice experiences and work-related rumination encourages future research to make further use of the literatures on organizational justice (Elovainio et al., 2013; Greenberg, 2010; Juvani et al., 2016; Robbins et al., 2012) and perseverant cognitions (Brosschot et al., 2006; Ottaviani et al, 2016; Pieper et al., 2010), both of which are oriented to physical or physiological health outcomes in addition to the psychological ones. Finally, the congruence of work-related rumination and exhaustion deserves further attention in studies on work and strain.

## 5.10 Conclusions and practical implications

On the basis of this study, favourable leadership is a major resource for an employee from an occupational health perspective. For a majority of the participants of this study, supervisors seemed to fulfil this function, and well-being among these employees remained reasonably high in a long-term perspective. The role of leaders can, however, be overemphasized in light of the findings that showed the extent to which perceived leadership and especially the energetic resources of employees are intertwined. Particularly, employees with strong changes in their levels of well-being may perceive the behaviours of their supervisors and interact with them differently depending on their level of well-being. From this viewpoint, well-being, and particularly energy, can be considered the primary resource for an employee.

In research on occupational health psychology, transformational leadership has been considered as the most beneficial leadership style with regard to employee well-being. Although the effects of transformational leadership also seemed to be favourable in this work, the results of the current study do not support the added value of transformational leadership in terms of employee well-being, and thereby cast doubt on the specific role of transformational leadership. Instead, the findings indicate that the same level of well-being can be attained with more elementary aspects of leadership, that is, leader fairness. Fairness is also more important with regard to prevention of impairment of well-being. Furthermore, all the leadership measures used in this study showed high correlational overlap. Considering earlier literature, this overlap draws attention to affective factors in leadership measurement and, in a more substantive sense, to general attributes of good relationships between leaders and employees.

Regarding the practical implications with specific focus on employee well-being, leaders do not need to worry if they find it difficult to adopt transformational leadership behaviours as long as they are fair and treat their employees with respect.

Fairness in supervisory work refers to respectful, equal and unbiased treatment, equality in distribution of work tasks, and fair performance evaluation. Furthermore, leaders should be aware that they are in an important position with regard to employees' work-related mind and well-being. Among their employees, individuals have different susceptibilities to impairment of well-being.

Leaders can support employee well-being, for example, by enhancing efficacy beliefs related to work, and by showing that it is reasonable to leave work-related issues aside during off-job time. Particularly individuals working in jobs with high emotional and cognitive demands may have difficulties in switching off from work-related problems. In order to disengage from work, they may benefit from making a plan on how to proceed with unattained goals (Masicampo & Baumeister, 2011) or from using strategies that helped intervention participants to psychologically distance themselves from work (Hahn, Binnewies, Sonnentag, & Mojza, 2011). Concerning unfairness, expressive writing may help. Specifically, an intervention study found that writing about thoughts and emotions related to an unfair experience at work improved psychological well-being, decreased anger and intentions to retaliate, and enhanced sense of personal resolution with the experience (Barclay & Skarlicki, 2009).

Employee well-being is jointly affected by many factors instead of a single determinant. Accordingly, the role of work characteristics should not be ignored even if the role of leadership is acknowledged. Having simply too much work considerably contributes to exhaustion and impaired well-being. Similarly, autonomy in work tasks as well as clarity of expectations and areas of responsibility are important to enhance work engagement.

Additionally, it would also be good if employees were aware that their level of well-being and mood may affect how they perceive the leadership behaviours of their supervisor. In addition, it is likely that an individual employee's view on the leadership behaviours is only partly shared with other employees in the work unit. Acknowledging this does, by no means, indicate that unfavourable leadership would always be redundant to coloured perceptions of employees. Unfairness and abuse require a closer look at the situation and should always be taken seriously, particularly because organizational supervisors are in a position that magnifies the meaning of their behaviours in relation to the employees under their supervision.

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## ORIGINAL PUBLICATIONS

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TRANSFORMATIONAL LEADERSHIP AND DEPRESSIVE SYMPTOMS AMONG EMPLOYEES:  
MEDIATING FACTORS

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Running head: Mediating factors

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## Abstract

**Purpose.** The study aims to examine whether the link between transformational leadership and depressive symptoms among employees is mediated by such personal resources as occupational self-efficacy, perceived meaningfulness of the work, and work-related rumination.

**Design/methodology/approach.** The study was conducted using questionnaires among 557 Finnish municipal employees in various occupations. The statistical analysis was based on structural equation modeling. A multiple mediation model enabled us to investigate the specific indirect effects of each mediator. Model comparison was applied to ascertain whether the mediation should be considered as full or partial.

**Findings.** Results based on model comparison showed that the proposed factors fully mediated the negative relationship between transformational leadership and depressive symptoms. Thus high level of transformational leadership was associated with high levels of occupational self-efficacy and perceived meaningfulness of the work, and low level of work-related rumination during off-job time, which, in turn, were associated with low level of depressive symptoms. The fully mediated model explained 36% of the variance in depressive symptoms. All of the three mediators made a unique contribution to this relationship.

**Research limitations / implications.** The results imply that transformational leadership behaviors may decrease depressiveness among employees through strengthening the personal resources of employees. However, as the study is cross-sectional, causal relationships can only be hypothesized.

**Originality/value.** The study sheds new light on the possible processes through which transformational leaders may exert their health-promoting effects on employees even in terms of depressive symptoms.

Keywords: transformational leadership, (mental) depression, mediation, self-efficacy, meaningful work, rumination

# Transformational leadership and depressive symptoms among employees: Mediating factors

## Introduction

The role of leadership in employee well-being is of great importance but is not yet well understood. In recent years, however, an increasing amount of research on this issue has been conducted. Positive leader behaviors such as support, feedback, trust, confidence, and integrity have been found to be related to high levels of affective well-being and low stress levels in employees (see [Skakon \*et al.\*, 2010](#), for a review). Likewise, a meta-analysis of 27 studies found moderate evidence that leadership is associated with job well-being ([Kuoppala \*et al.\*, 2008](#)).

Regarding specific leadership styles, transformational leadership especially has been related to positive employee outcomes ([Skakon \*et al.\*, 2010](#)). [Burns \(1978\)](#) originally introduced the construct of transformational leadership in contrast to transactional leadership in the context of political leadership, and the construct was further developed by [Bass \(1985\)](#). Several scholars have addressed the topic of transformational leadership since then and even earlier with the construct of charismatic leadership ([Lowe \*et al.\*, 1996](#)). In addition, several definitions and options for its measurement have been proposed ([Carless \*et al.\*, 2000](#); [Podsakoff \*et al.\*, 1990](#)). Transformational leadership is a well-known predictor of employee job performance (see [Wang \*et al.\*, 2011](#) for a recent meta-analysis) and job satisfaction, motivation, and satisfaction with the leader ([Judge and Piccolo, 2004](#)). Employee health and well-being are still far less studied criteria in this regard, although the last ten years have seen a growing interest in the associations between transformational leadership and employees' psychological health (see [Skakon \*et al.\*, 2010](#)).

[Podsakoff \*et al.\* \(1990\)](#) sum up their review of transformational leadership in six behaviors characterizing transformational leaders, i.e. identifying and articulating a vision, providing an appropriate model, fostering the acceptance of group goals, high performance expectations, providing individualized support, and intellectual stimulation. In other words, transformational leaders motivate and inspire others through an attractive vision of the future, serve as an example and role model for employees, promote cooperation among the employees toward a common goal, and stimulate others intellectually by questioning assumptions and approaching situations in new ways ([Bass and Avolio, 1994](#); [Podsakoff \*et al.\*, 1990](#)). Further, transformational leaders expect high performance and quality in terms of employees' work while at the same time paying attention to the individual developmental needs and concerns of the employee as a whole person ([Bass and Avolio, 1994](#); [Podsakoff \*et al.\*, 1990](#)). Presumably the most used description of transformational leadership, however, is the composition of the four i's, namely idealized influence, inspirational motivation, intellectual stimulation, and individual consideration ([Bass and Avolio, 1994](#)).

The present study addresses transformational leadership style in relation to depressive symptoms among employees. We consider depressive symptoms as a highly topical outcome as depression is among the leading causes of disability worldwide ([Murray and Lopez, 1996](#)) with substantial work-related indirect costs in the

form of productivity loss resulting from absenteeism and reduced productivity at the workplace ([Greenberg et al., 2003](#); [Luppa et al., 2007](#)). In 2000, the workplace costs of depression in the USA were estimated to be \$51.5 billion ([Greenberg et al., 2003](#)). In the occupational health psychology literature, transformational leadership has mainly been studied in relation to affective or general psychological well-being, i.e. positive emotions and lack of distress ([Arnold et al., 2007](#); [Kelloway et al., 2012](#); [Nielsen et al., 2008](#); [Tafvelin et al., 2011](#)) while research on more specific outcomes like depression is scarce.

Recently there has been a call for studies focussing on mediators between leadership and followers' well-being ([Skakon et al., 2010](#)) and on processes through which transformational leaders exert their influence ([Bono and Judge, 2003](#)). In this study, three factors are examined as possible mediators between transformational leadership and employees' depressive symptoms, namely occupational self-efficacy beliefs, perceived meaningfulness of the work, and (low-level) work-related rumination. Drawing on the Conservation of Resources (COR) theory ([Hobfoll, 1989](#)), these constructs can be seen as personal resources, i.e. aspects of self that are generally linked to resiliency ([Hobfoll et al., 2003](#)). They are based on an employee's subjective appraisal of his/her relation to the work and each of these mediators has been shown to covary with well-being, as shown later in this paper. Investigation of the mediating processes enhances our understanding of why leadership is essential to workplace health and well-being. To the best of our knowledge, no research has so far been published on the mediating factors between leader behavior and depressive symptoms of employees except for one study investigating abusive supervision ([Tepper, 2000](#)).

### ***Transformational leadership and depressive symptoms***

Depression is a multifaceted mood disorder characterized by a cluster of symptoms, such as despondent mood and loss of pleasure, interest and energy ([Hammen and Watkins, 2008](#)). Depression should be conceived of as a dimensional rather than as a categorical phenomenon ([Prisciandaro and Roberts, 2005](#)). Hence, experiencing depressive symptoms does not necessarily mean a clinical, diagnostic case.

So far leader behavior has not been a central focus in the research on occupational risk factors for depression, although the effect of psychosocial work characteristics on depressive symptoms is well-established. High job strain (defined by high demand and low decision authority) and low social support have been shown to be prospective risk factors for common mental disorders (see [Stansfeld and Candy, 2006](#), for a review) as well as specifically for depression ([Bonde, 2008](#); [Mausner-Dorsch and Eaton, 2000](#); [Melchior et al., 2007](#); [Niedhammer et al., 1998](#); [Paterniti et al., 2002](#); [Rau et al., 2010](#); [Wang, 2005](#)). Therefore leadership deserves more research attention in relation to depression.

There is some evidence that leader behavior matters in this regard. First, [Tepper \(2000\)](#) found abusive supervision (i.e. "sustained display of hostile verbal and nonverbal behaviors, excluding physical contact", p. 178) to predict subsequent depressive symptoms. Second, [Munir et al. \(2010\)](#) showed that transformational leadership was both cross-sectionally and prospectively related to depression. However, either of these studies controlled for the baseline level of depression. To the

best of our knowledge, the study by Munir *et al.* (2010) is the only study so far to examine the relationship of transformational leadership style and depressive symptoms overall. Despite the lack of studies linking transformational leadership and depressiveness, several studies have found positive relationships between transformational leadership and employee well-being (Arnold *et al.*, 2007; Kelloway *et al.*, 2012; Nielsen *et al.*, 2008; Tafvelin *et al.*, 2011), and negative relationships with employee burnout (Corrigan *et al.*, 2002; Hetland *et al.*, 2007; Seltzer *et al.*, 1989), and job-related stress (Seltzer *et al.*, 1989; Sosik and Godshalk, 2000).

In addition, studies concerning social support at work have implicitly associated leader behavior and employee mental health, as in the social support literature support from the leader is one type of social support. For example, in the large-scale longitudinal Whitehall II Study, social support composed of support from colleagues, support from supervisors, and clarity and information from supervisors, predicted low scores on a psychiatric disorder scale and low-level psychiatric sickness absences across 5.3 (average follow-up) years (Stansfeld *et al.*, 1997). Furthermore, lack of instrumental support from colleagues and supervisors has been related to diagnostic depression (Waldenström *et al.*, 2008). Additionally, supervisor support has acted as a moderator in the relationship between social stressors at work and depressive symptoms so that under low-support conditions, depressive symptoms were exacerbated by social stressors (Dormann and Zapf, 1999). In the Finnish Public Sector Study, low relational justice – meaning unfair and inconsiderate behaviors of leaders – predicted subsequent physician-diagnosed depression but only prior to adjustment for psychological distress at baseline (Ylipaavalniemi *et al.*, 2005). Furthermore, low workplace social capital (three out of eight questions directly related to one's supervisor) predicted physician-diagnosed depression prospectively even after adjusting for psychological distress at baseline (Kouvonen *et al.*, 2008). Thus, leadership is a prominent aspect of workplace social relations contributing to employee depression.

### ***The role of personal resources as mediators***

In this study, three psychological factors identified in earlier research and conceptualized in the present study as personal resources of employees, are examined as potentially mediating factors between transformational leadership and depressive symptoms of employees.

Self-efficacy, referring to an individual's expectations that (s)he can successfully execute behavior to achieve certain outcomes and thus exercise control in relation to events affecting one's life (Bandura, 2000), has been studied in different contexts as an important predictor for sustained action, performance and various health outcomes. The negative association between self-efficacy and depressive symptoms, meaning that those high in self-efficacy are low in depressive symptoms, has been reported in several studies (e.g. Maciejewski *et al.*, 2000).

Research on self-efficacy as a mediator between leadership and various employee outcomes has yielded mixed results (van Knippenberg *et al.*, 2004). Cross-sectional research has found that employee self-efficacy and team efficacy both serve as links between transformational leadership and employees' psychological well-being (Nielsen *et al.*, 2009). In another study, an employee's self-efficacy and trust in the

leader fully mediated the relation between transformational leadership and perceived work stress and stress symptoms, and partially mediated the link between transformational leadership and job satisfaction (Liu *et al.*, 2010). Nevertheless, a relationship between transformational leadership and employee self-efficacy has not been found in all studies (e.g. Felfe and Schyns, 2002). In a longitudinal study by Nielsen and Munir (2009), transformational leadership and self-efficacy were related only cross-sectionally (at Time 2) when the relationship between transformational leadership and affective well-being was fully mediated by self-efficacy.

According to Bandura (2000), it is more appropriate to investigate self-efficacy as a context-specific construct than in general terms. We therefore measured occupational self-efficacy (Rigotti *et al.*, 2008) which is relevant in the study context and supposedly more susceptible to change according to leader behaviors than general self-efficacy.

Deriving meaning from one's work can be considered essential to one's well-being, as beliefs imparting a sense of purpose and meaning is among the components of positive well-being and functioning (Ryff, 1989). Meaning at work predicted mental health and vitality in a five-year follow-up study (Burr *et al.*, 2010), and meaning at work has been prospectively predicted by job demands and job resources, including quality of leadership (Clausen and Borg, 2011). Meaningfulness in the frame of coherence theory refers to the experience that demands in relation to one's inner and outer environment are challenges worthy of investment and engagement (Antonovsky, 1987). Thus, because of its motivational potential, the experience of meaningfulness is the most central aspect of the sense of coherence (Antonovsky, 1987). Sense of coherence, comprising of comprehensibility, manageability, and meaningfulness, has been shown to mediate the effects of work characteristics, including leadership relations, on well-being (Feldt *et al.*, 2000). Earlier research has shown that transformational leaders promote employees' experience of their work as meaningful, which in turn promotes employees' well-being (Arnold *et al.*, 2007; Nielsen *et al.*, 2008). In addition, followers of transformational leaders have been found to view their work as more important and as more self-congruent, which lends empirical support to the motivational effects of transformational leaders (Bono and Judge, 2003). Transformational leaders' inspirational way to motivate and their ability to literally imbue the work with meaning together with consideration for individuals make these results understandable (Bass and Avolio, 1994).

The present study aims to go beyond earlier research in several ways. First, self-efficacy and meaningfulness of work are known to mediate the relationship between transformational leadership and employee well-being (e.g. Arnold *et al.*, 2007; Liu *et al.*, 2010; Nielsen *et al.*, 2008, 2009) but have not earlier been studied as mediators in relation to depressive symptoms. Second, even though research has identified several mediators in the relationship between transformational leadership and employee well-being, we are so far unaware of the unique effects of these identified mediators. In other words, as leaders are supposed to affect employees through several factors, investigating single mediation models or models with aggregated mediators entails the problem of specification error (Mathieu *et al.*, 2008; Taylor *et al.*, 2008). Specifying a multiple mediator model the present study treats the mediators as separate constructs in the same model and also shows their unique

effects, that is, effects after taking the other mediators into account (Preacher and Hayes, 2008).

In addition to the two mediators identified by earlier research, we introduce a new candidate for mediation. The third possible mediator, work-related rumination, refers to mental strain and recurrent, persistent thoughts in an uncertain situation when an individual experiences a discrepancy between a given situation and an important personal goal (Mohr et al., 2006). Mohr and colleagues originally conceptualized this construct as cognitive irritation, which, together with emotional irritation (irritability, anger), forms a higher-order construct of irritation (Mohr et al., 2006). As we only utilize the cognitive, ruminative part of the construct, we use the more familiar term work-related rumination (e.g. Cropley and Purvis, 2003). Ruminative thinking has been shown to predict depressive symptoms in longitudinal studies (e.g. Nolen-Hoeksema et al., 1999) and even diagnostic depressive disorders (Nolen-Hoeksema, 2000).

Work-related rumination parallels the concept of (low-level) psychological detachment from work, i.e. the ability to mentally detach oneself from work during off-job time (Fritz et al., 2010; Sonnentag and Fritz, 2007). Work-related rumination as a concept differs from the concept of psychological detachment in that it refers solely to the negative side of thinking about work during off-job time, e.g. concentrating on problems. Low psychological detachment predicts emotional exhaustion over time (Sonnentag et al., 2010) and mediates the relationship between job demands and fatigue at work (Kinnunen et al., 2011). Irritation including both cognitive and emotional aspects has been found to mediate the effects of social (also supervisor-related) stressors on depressive symptoms (Dormann and Zapf, 2002). We assume leaders to be in an important position either to promote or impede employees' process of mentally switching off from work-related issues during free time, although as far as we are aware leader impact in this regard has not yet been examined. In the present study we are interested to investigate whether transformational leadership style contributes to employees becoming psychologically detached from work-related problems during their off-job time, which means displaying low-level work-related rumination.

### ***The present study***

The present study bases its hypotheses on the Job Demands-Resources (JD-R) model (Bakker and Demerouti, 2007) and on the COR theory (Hobfoll, 1989) behind it. In light of the JD-R model and earlier evidence on the positive effects of transformational leadership, we consider transformational leadership to be a work-related resource for an employee. Resources in the JD-R model refer to those aspects of the job that are "functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, and stimulate personal growth, learning, and development" (Bakker and Demerouti, 2007, p. 312). According to the JD-R model, lack of job resources, for example, lack of transformational leadership, is linked to ill-being, of which depression is one symptom.

We approach the mediating role of personal resources from the perspective of resource gain, as proposed in the COR theory (Hobfoll, 1989), the basic tenets of which the JD-R model utilizes. The JD-R model has been seen as an application of the

more general COR theory in the work context (Hakanen et al., 2008). First, the basic tenet of COR theory is that people strive to obtain, retain, protect, and foster resources and actual or potential loss of these valued resources is threatening to them and causes stress (Hobfoll, 1989, 2002). Second, the theory posits that resources are linked to other resources and thus “there is a general tendency for enrichment of resources among those who possess a solid resources reservoir” (Hobfoll, 2002, p. 318). Opposite to the resource accumulation is loss spirals, which develop due to a lack of resources to offset loss (Hobfoll 1989; see also Demerouti et al., 2004). The idea of personal resources has actually been incorporated into the JD-R model (Bakker and Demerouti, 2007; Xanthopoulou et al., 2007, 2009), and the suggestion of job resources fostering the development of personal resources (resiliency beliefs) has gained support in several studies (Hakanen et al., 2008; Mauno et al., 2007; Weigl et al., 2010; Xanthopoulou et al., 2007, 2009).

As the personal resources are not trait-like but susceptible to change, positive leader behavior is assumed to foster the development of personal resources, which in turn are assumed to be linked to low-level depressive symptoms. Using relevant factors identified in earlier research on health effects of leadership, and drawing on the JD-R model and the COR theory behind it, we present the following hypotheses (see Figure 1):

*H1a.* Transformational leadership is positively related to employees’ occupational self-efficacy beliefs.

*H1b.* Transformational leadership is positively related to perceived meaningfulness of the work.

*H1c.* Transformational leadership is negatively related to work-related rumination of employees.

Lack of personal resources can be seen as an antecedent to depressive symptoms and enhancing these resources presumably has an inhibiting or alleviating effect on depressive symptoms. Therefore we assume these personal resources to be linked to low-level depressive symptoms and hypothesize the following:

*H2a.* Occupational self-efficacy of employees is negatively related to their depressive symptoms.

*H2b.* Perceived meaningfulness of the work is negatively related to employees’ depressive symptoms.

*H2c.* Employees’ work-related rumination is positively related to their depressive symptoms.

The aim of the study is to examine the mediating role of these factors and therefore the final hypothesis is:

*H3.* The relationship between transformational leadership and employees’ depressive symptoms is mediated by occupational self-efficacy, perceived meaningfulness of the work, and work-related rumination of employees.

## Methods

### *Participants and procedure*

The present study is part of a larger research project entitled Rewarding and Sustainable Health-promoting Leadership (Re-Su-Lead) conducted in three countries, but the work at hand concerns only the Finnish sample of that project. To recruit participants, we contacted human resource management in nine municipalities and introduced the research project by sending them a short letter describing the project. Two weeks thereafter we called the human resource managers to elicit their decision on the participation. Four out of nine municipalities agreed to participate in the study. The human resource management in these four municipalities decided themselves which employee groups they would have participate in the study. Our main criterion for participation was that the participants should work in units each having a leader.

The data were collected through paper and electronic questionnaires in the Spring of 2011. The participants completed questionnaires on their work and psychological health and rated behaviors of their immediate supervisors. Of the 891 eligible municipal employees contacted, 557 returned the completed questionnaire after two reminders, yielding a response rate of 62.5 percent. The only background information available concerning all the employees contacted was gender. The proportion of women in the final sample was found to be significantly higher than the proportion of women among all employees invited to participate in the study (85 vs 81 percent). In other words, women were over-represented as study participants ( $\chi^2(1)=6.076, p<0.05$ ). The mean age of the participants was 48 years ( $SD=9.7$ ). Further description of the sample is provided in [Table I](#).

### *Measures*

#### *Transformational leadership*

The Global Transformational Leadership Scale (GTL; validated by [Carless et al., 2000](#)) was used to measure employees' perceptions of transformational leadership. The GTL has shown a high degree of convergent validity in relation to lengthier questionnaires such as the Multifactor Leadership Questionnaire (MLQ) and the Leadership Practices Inventory ([Carless et al., 2000](#)). In addition, the subscales of the better established MLQ measure have been found to be very highly correlated ([Lowe et al., 1996](#)) which is an argument to use a shorter, global measure of transformational leadership. The GTL measure includes seven items describing various transformational leadership behaviors, e.g. "My immediate superior treats staff as individuals, supports and encourages their development". The items were scored from 1 (to a very small extent) to 5 (to a very large extent).

*Depressive symptoms* were measured with the Major Depression Inventory which was validated by [Bech et al. \(2001\)](#). The measure consists of 12 questions concerning the two last weeks, e.g. "How much of the time you have felt low in spirits or sad?", and rated on a scale from 0 (at no time) to 5 (all the time). Of the items about being restless or subdued and having reduced or increased appetite only the higher value is counted within the total score.

*Occupational self-efficacy* was measured with the six-item measure developed and validated by [Rigotti et al. \(2008\)](#). The items (e.g. "I can remain calm when facing



difficulties in my job because I can rely on my abilities”) were scored from 1 (totally disagree) to 7 (totally agree). Perceived *meaningfulness of the work* was assessed with three items (e.g. “Do you feel that the work you do is important?”) from the Copenhagen Psychosocial Questionnaire, a lengthy questionnaire on psychosocial work characteristics validated by [Pejtersen et al. \(2010\)](#). The rating scale ranged from 1 (to a very small extent) to 5 (to a very large extent). *Work-related rumination* was measured with the three-item scale (e.g. “Even at home I often think of my problems at work”) developed and shown to be valid by [Mohr et al. \(2006\)](#). The rating scale ranged from 1 (totally disagree) to 7 (totally agree). Concerning descriptive study results, all the study constructs were counted as mean-based sum variables.

Gender, age, living with a spouse, and negative life events were tested as covariates, as they have been shown to be linked to depression ([Kendler et al., 1999](#); [Kessler et al., 2003, 2008](#)). The respondents were asked if during the past year they had experienced any major life event which had affected their well-being negatively (like divorce, serious disease, death of a close one). The response options were 1 (no), 2 (yes, one), and 3 (yes, several). Of the participants, 31 percent had experienced at least one such life event during the past year.

## Results

### ***Descriptive results***

The means and reliabilities of the study variables are presented in [Table II](#). All of the reliabilities are well above the acceptance level of 0.70. As shown in the table, the correlations among the study variables were as expected.

### ***Testing the hypothesized mediation model***

The multiple mediation model hypothesized was analyzed with structural equation modeling (SEM) using Mplus program version 5.2. ([Muthén and Muthén, 1998-2007](#)). As a method of estimation we used maximum likelihood with robust standard errors (MLR) except for the bootstrapping method, which requires ML estimation. All study constructs were treated as latent variables. To avoid problems in interpretation due to simultaneous estimation of measurement and structural models, the two-step approach recommended by [Anderson and Gerbing \(1988\)](#) was followed. The first step refers to the analysis of the measurement model(s), and the second step consists of testing the relationships of the latent constructs in the structural model.

The measurement models (M1-M4) tested are shown in [Table III](#). As seen in the table, the measurement models of depressive symptoms (M3), all the mediators (the three-factor model M2) as well as of all the five study variables together (M4) provided acceptable fit to the data. However, the measurement model of transformational leadership (M1) showed higher than acceptable values of RMSEA. Nevertheless, the whole five-factor model (M4) showed good model fit, and therefore we decided to maintain a confirmatory line and not to modify the transformational measure. The factor loadings of all the measures were acceptable varying from 0.53 to 0.91. Only one of the transformational leadership items had a lower loading (0.33) than other items. In all, the analysis of the measurement model showed that the

constructs in the model on the one hand were each one-dimensional, and on the other hand were separate from each other. Thus the analysis supported both construct validity and divergent validity of the measures and further model estimation was justified.

Altogether we estimated three SEM models. Following the guidelines of [Anderson and Gerbing \(1988\)](#), first a null model (in which all parameters between the constructs are fixed at zero) was estimated. The null model was compared with the full mediation model (in which there is no direct path between transformational leadership and depressive symptoms). Finally, the full mediation model was compared to a partial mediation model (in which there is a direct path between transformational leadership and depressive symptoms in addition to the paths via the three mediators). These three sequential nested models were compared with each other with the scaled Satorra-Bentler  $\chi^2$ -difference test.

The comparisons, shown in [Table IV](#), showed that the full mediation model fitted the data significantly better than the null model, but when the full mediation model was compared to a partial mediation model the result of this comparison was non-significant. In other words, adding the direct path from transformational leadership to depressive symptoms to the model did not make the model fit significantly better than the fully mediated model. In addition, we found the direct path to be non-significant when scrutinizing the paths in the partial model. Thus, the fully mediated model is to be considered as the best fitting one.

The models compared were estimated without any covariates. However, knowing the common risk factors for depression we wanted to control for the effects of background factors (gender, age, living with a spouse, and negative life events) in the final model. Of these, gender and negative life events proved significant and were thus included in the final model shown in [Figure 2](#). The model explains 36 percent of the variance in depressive symptoms. All the regression paths were statistically significant but they were not very strong. As seen in the figure and supporting *H1a-H1c*, transformational leadership is positively associated with occupational self-efficacy and perceived meaningfulness of the work and negatively associated with work-related rumination. Occupational self-efficacy and perceived meaningfulness of the work in turn are negatively related to depressive symptoms of employees, whereas work-related rumination is positively related to depressive symptoms. Thus, *H2a-H2c* also received support.

*H3* concerns the testing of the indirect effects. For this purpose methodologists have recommended bootstrapping, a nonparametric resampling procedure, as the sampling distribution of indirect effects is seldom normal ([Bollen and Stine, 1990](#); [MacKinnon et al., 2004](#); [Preacher and Hayes, 2008](#)). Bootstrapping is a computation-intensive method in which an empirical sampling distribution is created through resampling the original sample ([Hayes, 2009](#)). Taking into account the non-normal distribution of depressive symptoms and in order to access robust estimates of the indirect effects, we used Mplus program to compute recommended bias-corrected confidence intervals (CIs) for the indirect effects based on bootstrap ([MacKinnon et al., 2004](#); [Preacher and Hayes, 2008](#)). The specific indirect effect is significant if no zero occurs in the CI.

Based on a bootstrap of 5,000 resamples and the standardized results with 95 percent CI, all of the tested indirect effects between transformational leadership and depressive symptoms were significant. *H3* was thus supported. The standardized estimate for the indirect effect was  $-0.070$  (95 percent CI= $-0.116$  to  $-0.023$ ) for occupational self-efficacy,  $-0.036$  (95 percent CI= $-0.070$  to  $-0.003$ ) for perceived meaningfulness of the work, and  $-0.041$  (95 percent CI  $-0.078$  to  $-0.004$ ) for work-related rumination. The standardized estimate for the total indirect effect was  $-0.147$  (95 percent CI= $-0.203$  to  $-0.091$ ).

## Discussion

The purpose of this study was to examine the role of mediators in the negative relationship between transformational leadership and depressive symptoms among employees. With the design of multiple mediation we aimed to investigate specific indirect effects, that is, unique contributions of the three mediators conceptualized as personal resources of employees. The results supported our hypotheses (*H1-H3*) regarding the relations between transformational leadership, the expected mediators, and depressive symptoms. The results revealed first that the relationship between transformational leadership and depressive symptoms of employees is fully mediated through these mediators. Second, regarding the specific mediator effects, the results showed that all of the three mediators occupational self-efficacy, perceived meaningfulness of the work and work-related rumination have unique mediating effects. Overall, although the indirect effects were significant, they were not strong.

The fully mediated model yielded the best fit to the data. This result implies that leaders are unlikely to influence depressivity in employees directly, but they do affect the antecedents enhancing or reducing employees' susceptibility to depressive symptoms. Therefore the role of personal resources, resiliency beliefs (see [Xanthopoulou et al., 2007](#)) or psychological capital ([Luthans et al., 2006](#)), all of them capturing the same kind of phenomena, is extremely important in investigating how leaders affect their employees. This is in line with the resource gain and resources loss processes outlined in COR theory ([Hobfoll, 1989](#)) and the idea of transformational leaders changing the way their followers feel and think about themselves in relation to their work ([Bono and Judge, 2003](#)). Initial level of job resources (in our study transformational leadership) either furthers the resource gain process through personal resources, thereby preventing depressive symptoms, or conversely, lack of favorable leader behaviors diminishes the preventing potential of personal resources thereby increasing the likelihood of depressive symptoms. Thus transformational leadership appears to fit well into the definition of job resources in the JD-R model. Job resources in the model are not only important in their own right but also reduce the psychological costs resulting from job demands ([Bakker and Demerouti, 2007](#)).

Most earlier studies have examined mediators between leadership and employee well-being outcomes based only on single mediator models. However, leaders' influence on employee well-being is believed to be mediated through several factors. Thus multiple mediator models are needed to avoid specification errors, that is, biased parameter estimates resulting from omitted mediators ([Mathieu et al., 2008](#);

Preacher and Hayes, 2008). In this study the mediators were used as separate constructs in the same model, which enables us to judge the independence of the effect of a given mediator. Confidence intervals based on the bootstrap method showed that all the three mediators between transformational leadership and depressive symptoms have a unique mediating effect on a statistically significant level. That is, the three mediators indeed have effects independent of each other.

Our results replicate the result of Munir et al. (2010) on the negative relationship between transformational leadership and depressive symptoms of employees, and are in accordance with earlier findings on the mediating role of self-efficacy and meaningfulness of work in the relationship between transformational leadership and employee well-being and job satisfaction (Nielsen et al., 2009; Nielsen and Munir, 2009). Our result regarding the mediating role of work-related rumination provides new insight into how transformational leaders may exert their health and well-being promoting influence. Followers of transformational leaders may experience less psychological strain at work, so that they have less need to ruminate on work-related issues in their leisure time. Even if transformational leaders are demanding in terms of quality and provide their followers with challenges (Bass and Avolio, 1994), their followers have shown lower burnout and stress levels (Corrigan et al., 2002; Hetland et al., 2007; Seltzer et al., 1989; Sosik and Godshalk, 2000). This may be due to the supportive and empowering leadership behaviors (e.g. Carless et al., 2000) they exhibit besides the high performance expectations. It is important to note that the mediating effect of work-related rumination, albeit small, is independent of the effects of self-efficacy beliefs and meaningfulness of work which transformational leaders are known to influence.

Besides its strengths, this study has some limitations which have to be taken into account in interpreting the results. First, like most studies so far on transformational leadership and employee well-being, this study is cross-sectional and based on data from a single source (the employees themselves). It is entirely possible that employees who are prone to depressive symptoms and low in well-being rate their leaders more negatively than their colleagues who are high in well-being. On the other hand it can be argued that in occupational health it is in any case the employee's subjective experience of one's leader that matters, and not any objective rating. Indeed, a recent study supports the notion that it is the individual-level rather than group-level appraisals that matter in this regard (Kelloway et al., 2012). Second, the gender constellation in our sample deserves attention. Our sample was female-dominated and it remains unclear whether the same kind of mediators would work for male participants alone.

As far as we know, the longitudinal studies investigating leader behavior (van Dierendonck et al., 2004) or transformational leadership (Nielsen et al., 2008; Nielsen and Munir, 2009; Tafvelin et al., 2011) in relation to employee well-being have failed to find direct effects from leader behavior to employee well-being over time (with baseline level of well-being controlled for). This fact possibly reflects the stability of the constructs and the timely challenges in measuring posited cause and effect in leader-employee effect chains. Despite this, reciprocal effects between leader behavior and employee well-being have been suggested (van Dierendonck et al., 2004; Nielsen et al., 2008). As leaders and employees interact as human beings, it is almost self-evident

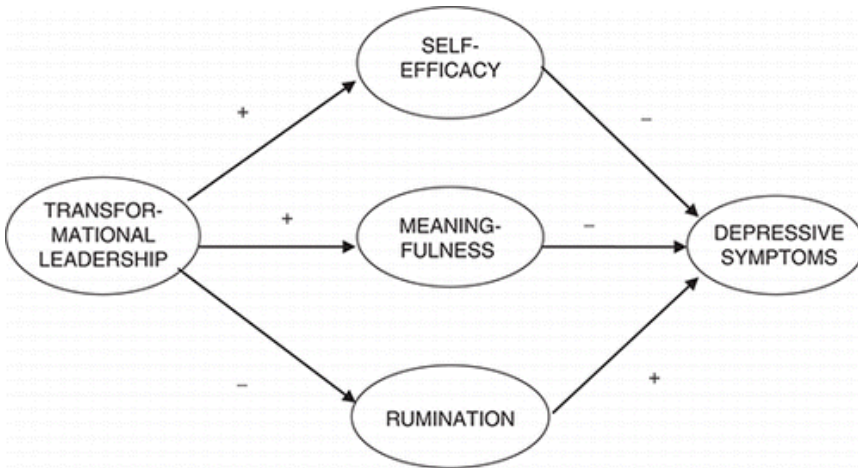
that they both affect each other. Therefore, it is also possible that leaders do behave in a different ways toward people who are high or low in well-being, as noted by van Dierendonck *et al.* (2004).

More high-standard longitudinal studies are needed to tackle the questions of the causal order of leader behavior and employee health and well-being. As suggested by Tafvelin *et al.* (2011), it is important to investigate the tenure of the leader-employee relationship as a possible moderator of the longitudinal relationship between leader behavior and employee well-being. In addition, knowing that employees differ in terms of their personal resources and liability to various psychological health problems, a central theme for future psychological studies on the health effects of transformational leadership is to ascertain for which kinds of employees transformational leadership behaviors are particularly important in relation to occupational health and performance.

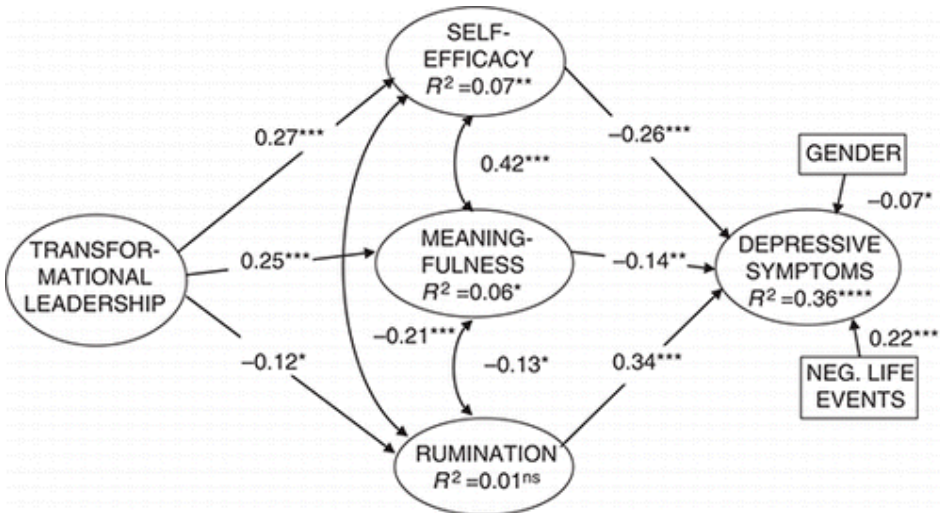
The results of the present study add to the existing findings of positive relations between transformational leadership and employee health and well-being. This study specified the ways in which transformational leaders may exert their positive influence even in relation to such a pervasive psychological impairment as depressive symptoms.

### ***Implications***

The scientific implications of the present study are two-fold. First, the results emphasize the role of work-related personal resources, i.e. individually structured resiliency beliefs, in the relation between leaders and their employees' psychological health. Second, the results stress the importance of examining several mediating factors between leadership and employee outcomes simultaneously to ascertain their unique mediating effects. Regarding implications for practice and society, this kind of knowledge has indeed practical value. Depression and depressive symptoms in working life cause human suffering in the form of impaired quality of life and, from the economic point of view, reduced productivity and lost working days. Besides the etiology of depression containing risk factors outside the work context (see e.g. Couser, 2008), the work context also merits attention in this regard. We suggest that our results also have managerial implications and encourage leaders to engage in transformational leadership behaviors to enhance employee self-efficacy, perceived meaningfulness of the work, and switching off from work-related problems at off-job time. These factors are relevant in preventing or alleviating already existing depressive symptoms of employees.



**Figure 1** Hypothesized multiple mediation model



**Notes:** Gender is coded 0 = female, 1 = male. Negative life events are coded 0 = none, 1 = one or several. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Figure 2** Multiple mediation model with standardized estimates for regression paths and explanation rates of the endogenous variables

**Table I** Background factors of the study participants

Background factor	%
<i>Occupational field (the four largest)</i>	
Education	21.4
Child care	21.5
Institutional cleaning	19.0
Institutional catering	11.7
<i>Highest completed education</i>	
Comprehensive school	13.0
Upper secondary degree (vocational qualifications or matriculation examination)	40.0
Special vocational qualifications	4.9
Bachelor's degree or equivalent	18.1
Master's degree or equivalent	22.4
Licentiate's or doctor's degree	1.6
<i>Employment relationship</i>	
Permanent employment contract	94.7
Full-time work ( $\geq 35$ h/week)	77.2
<i>Domestic sphere</i>	
Cohabiting with a spouse	75.5
Child/children at home	49.8

**Table II** Means, standard deviations and zero-order correlations of the study variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Transformational leadership	3.13	0.87	(0.91)				
2. Occupational self-efficacy	5.67	0.78	0.23***	(0.79)			
3. Meaningfulness of work	4.13	0.72	0.25***	0.40***	(0.80)		
4. Work rumination	3.02	1.57	-0.11**	-0.21***	-0.17***	(0.78)	
5. Depressive symptoms	0.59	0.66	-0.14**	-0.34***	-0.27***	0.46***	(0.90)

**Notes:** Cronbach's  $\alpha$ 's are shown on the diagonal. \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Table III** Fit indices of the measurement models

Model	$\chi^2$	<i>p</i>	df	CFI	TLI	RMSEA	SRMR
M1 Transformational leadership	126.733	0.000	14	0.949	0.923	0.120	0.043
M2 Mediators, the three-factor model	103.457	0.000	51	0.964	0.953	0.043	0.049
M3 Depression	76.064	0.000	35	0.970	0.961	0.046	0.031
M4 All constructs, the five-factor model	716.351	0.000	367	0.944	0.938	0.041	0.053

**Notes:** RMSEA, root mean square error of approximation; SRMR, the standardized root mean square residual; TLI, Tucker Lewis Index; CFI, comparative fit index. Taking the sample size ( $n = 557$ ) and model complexity into account, significant *p*-values are to be expected and acceptable values for CFI and TLI are  $> 0.92$ , for RMSEA  $< 0.07$ , and for SRMR  $\leq 0.08$

**Source:** Hair *et al.* (2010)

**Table IV** Model comparison and the final model fit indices

Models	$\chi^2$ (df)	RMSEA	CFI	TLI	Model comparison Satorra-Bentler scaled $\Delta\chi^2$
Null model	812.272 (372)	0.046	0.929	0.923	
Full mediation model	717.688 (368)	0.041	0.944	0.938	1 vs 2 $\Delta\chi^2$ (4) = 88.428***
Partial mediation model	716.351 (367)	0.041	0.944	0.938	2 vs 3 $\Delta\chi^2$ (1) = 1.337 <sup>ns</sup>
Full mediation model with significant covariates	830.580 (422)	0.042	0.937	0.931	



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### **Investigating Occupational Well-Being and Leadership From a Person-Centred Longitudinal Approach: Congruence of Well-Being and Perceived Leadership**

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### Abstract

The overall objective of this longitudinal study was to investigate the association between perceived leadership and employee well-being from a person-centred approach utilizing the principles of the conservation of resources theory (Hobfoll, 1989, 2002). First, we aimed to identify latent classes (i.e. subgroups) of employees that demonstrated similar mean levels of stability and change in occupational well-being (i.e. vigour and emotional exhaustion) across a mean time-lag of 14 months. Second, we ascertained whether employees in the latent well-being classes differed in their ratings of transformational, authentic, and abusive leadership behaviours across time. Self-report data were obtained from Finnish employees ( $N = 262$ , 88% women) working in a variety of municipal jobs. Using factor mixture modelling, four latent well-being classes were identified, indicating good (79%), low (10%), improving (8%), and deteriorating (3%) well-being. Congruence in both level and change of well-being and perceived leadership was found. That is, employees with better well-being across time reported more favourable leadership behaviours at both time points, and changes in employee well-being were reflected as changes in perceived leadership. The close relationship between perceived leadership and well-being is discussed from both a leader-centric (leadership as a resource) and a follower-centric (well-being as a resource) perspective.

*Keywords:* occupational well-being, vigour, exhaustion, leadership, person-centred approach

### **Investigating Occupational Well-Being and Leadership From a Person-Centred Longitudinal Approach: Congruence of Well-Being and Perceived Leadership**

Leadership in relation to employee well-being has been the focus of increasing research interest in recent years. Several studies have demonstrated that positive leader behaviours such as support, feedback, empowerment, integrity, and quality of communication are related to high levels of affective well-being and low stress levels in employees (see Kuoppala, Lamminpää, Liira, & Vainio, 2008; Skakon, Nielsen, Borg, & Guzman, 2010, for reviews). Despite the growing body of research on this topic, the relative scarcity of longitudinal research still limits understanding of the association between leadership and employee well-being. Moreover, research has thus far ignored the heterogeneity of employees with respect to occupational well-being and its development across time. Consequently, there is a lack of knowledge concerning what happens to employee ratings of leadership when employee well-being improves or declines. As changes in occupational well-being may occur in diverse patterns, sample-level analyses do not capture these changes.

To address this gap, we adopted a person-centred approach (e.g. Wang, Sinclair, Zhou, & Sears, 2013) in the present longitudinal study and sought to identify subgroups (i.e. latent classes) of employees demonstrating similar patterns of occupational well-being across time. Subsequently, we investigated whether the employees in these subgroups differed in their ratings of transformational, authentic, and abusive leadership behaviours. Investigating several leadership styles, both positive and negative, in the same study enabled us to address the potential differences in their relations with the patterns of occupational well-being. We based our study on the job demands-resources model (Bakker & Demerouti, 2007) and the conservation of resources theory (Hobfoll, 1989, 2002).

#### ***Leadership in the Job Demands-Resources Model***

In the job demands-resources (JD-R) model, job resources refer to physical, psychological, social, or organizational aspects of the job that are “functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, and stimulate personal growth, learning, and development” (Bakker & Demerouti, 2007, p. 312). Consistent with this definition, transformational and authentic leadership styles are posited to foster growth, learning, and development among employees, and accordingly can be considered as job resources for an employee. According to the motivational process outlined in the JD-R model, job resources enhance work engagement, a fulfilling work-related state of mind, which in turn links to favourable organizational outcomes (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004).

*Transformational leadership* depicts visionary, empowering, and intellectually stimulating leaders who emphasize common goals and are respected by their staff (Bass, 1985; Carless, Wearing, & Mann, 2000). Transformational leadership theory (Bass, 1985) includes several components that can be of motivational and affective value for employees. The well-documented, systematic association between transformational leadership and employee well-being (for reviews, see Arnold & Connelly, 2013; and Skakon et al., 2010) may, for instance, relate to an enhanced sense of meaning (e.g., Ghadi, Fernando, & Caputi, 2013) and optimism (Tims, Bakker, & Xanthopoulou, 2011) among employees due to transformational leaders conveying an attractive vision of the future and their strong sense of mission. Furthermore, transformational leaders inspire their followers by encouraging novel approaches to old problems. Importantly, while nurturing social cohesion among their followers, transformational leaders also attend to followers’ individual developmental needs and concerns, thus providing psychosocial support (Bass, 1985). Regarding the instrumental role of transformational leadership in the achievement of work goals by employees, a large body of empirical research

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supports the functionality of transformational leadership with respect to employee performance (for a review, see Wang, Oh, Courtright, & Colbert, 2011).

*Authentic leadership* is a relatively new concept and refers to leaders who display high levels of self-awareness and understanding of their own leadership, present their authentic selves to others, and act in accordance with deep personal values while encouraging diverse views (Walumbwa et al., 2008). In a theoretical model presented by Gardner et al. (2005), authentic leadership is mirrored in authentic followership, which in turn is posited to lead to such positive follower outcomes as trust, engagement, and well-being. This model relies particularly on the self-awareness and self-regulatory aspects of authentic leadership, which followers are assumed to model after their leaders.

By nurturing authenticity, authentic leaders help their followers to become more self-concordant at work and to find their true talent (Gardner et al., 2005). Concerning self-awareness, authentic leaders exhibit increased self-perception and insight in relation to their values, strengths and weaknesses, and impact on others (Walumbwa et al., 2008). Self-regulation, in turn, refers to several features, such as actions guided by the leader's self as opposed to external pressures; unbiased processing of information before coming to conclusions; and transparent, open, and truthful relations with others (Gardner et al., 2005; Walumbwa et al., 2008). As these behaviours are likely to build up open and trusting relationships between leaders and followers, authentic leadership is evidently a resource for an employee. Authentic leadership presumably plays an intrinsic motivational role as a job resource, as authentic behaviours can be considered valuable in their own right, without an overt link to goal attainment (Schaufeli & Bakker, 2004).

Both transformational and authentic leaders demonstrate a high level of integrity and clarity in their behaviours (Gardner et al., 2005; Walumbwa et al., 2008), which in itself may lessen the burdening feelings of contradiction among employees. Overall, it appears that transformational and authentic leadership are apt to facilitate a sense of meaningfulness among employees, which in turn promotes psychological health and well-being (e.g., Ghadi et al., 2013). Despite some similarities, the theories behind these leadership styles differ, particularly with respect to the processes of influence and follower development. While transformational leaders typically use symbolism, charisma, and inspirational appeal to influence others and are described as developing their followers into leaders, authentic leaders focus on developing their followers toward authenticity (Gardner et al., 2005; Walumbwa et al., 2008). Their impact on others is mostly based on their character and personal example (Walumbwa et al., 2008). Although authentic leadership is close to transformational leadership, at least two studies have reported results indicating that these are distinct constructs (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008; Walumbwa, Luthans, Avey, & Oke, 2011).

Aside from these constructive leadership behaviours, destructive forms of leadership have attracted increased research interest in recent years (Schyns & Schilling, 2012). In the present study we address *abusive supervision* which is defined by Tepper (2000, p. 178) as "subordinates' perception of the extent to which the supervisors engage in sustained display of hostile verbal and nonverbal behaviours, excluding physical contact". Albeit displaying emotion, abusive supervision stands in sharp contrast particularly with authentic leaders' strong self-awareness and self-regulative behaviour (Walumbwa et al., 2008). Abusive supervision is assumed to require sustained psychological effort on the part of the subordinate and is, therefore, associated with physiological and/or psychological costs, consistent with the definition of job demands in the JD-R model (Bakker & Demerouti, 2007). According to the JD-R model's health impairment process, high job demands exhaust employees' mental and physical resources and eventually lead to health problems (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Concerning the strain resulting from abusive supervision, the experience of unfairness may explain employee reactions. Abusive supervision implies a breach of the

interactional form of organizational justice, in other words, a lack of respect and propriety on the part of the organizational representatives (Tepper, 2000; see also Schyns & Schilling, 2012).

### ***Leader- and Follower-Centric Views on Leadership and Employee Well-Being***

While associations between leadership and employee well-being have been consistently found in cross-sectional studies, longitudinal studies have thus far not indicated leadership effects on well-being beyond the stability of well-being (Nielsen & Munir, 2009; Nielsen, Randall, Yarker, & Brenner, 2008; Tafvelin, Armelius, & Westerberg, 2011; van Dierendonck, Haynes, Borrill, & Stride, 2004). In fact, reverse causality (or an affect-based appraisal) seems to be at least as likely as normal causality. For example, in Nielsen et al.'s (2008) study, employee well-being actually predicted an increase in transformational leadership, but not vice versa. Furthermore, de Lange et al. (2004) found supervisor support and emotional exhaustion of employees to be in a reciprocal relationship, and job satisfaction predicted an increase in social support from supervisors across time. These results demonstrate the complexity of the association between leadership and employee well-being, and indicate that both leadership and employee well-being may serve as an antecedent for favourable or unfavourable development.

Although evidence of leader impact on employee well-being from longitudinal studies has been rather weak, research thus far can be considered leader-centric, meaning that it has concentrated on leaders influencing followers. The leader-centric perspective is consistent with the JD-R model, incorporating leadership as a resource or, alternatively, as a demand, and proposes that leadership influences employee health and well-being. However, in leadership research, the follower is becoming an integral part of the dynamics of leadership and a focus of growing research attention (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). The follower-centric line of research considers the followers' mind-set as a starting point for the evaluation and acceptance of a leader and addresses the characteristics of followers in explaining follower reactions (e.g. Felfe & Schyns, 2010; Howell & Shamir, 2005).

This perspective is of particular importance in employee self-report studies in which leadership is operationalized as employee appraisals of leadership behaviours. While it is true that "leader behavior can only have an effect when it is perceived by followers" (Schyns & Schilling, 2012, p. 3), theoretical and empirical work on followers' affective and cognitive information processing suggests that there is more to employee ratings on leadership than the actual leader behaviour (e.g. Hall & Lord, 1995). In particular, mood-congruent information processing (e.g. Clore & Martin, 2012) may cause inflated relationships in employee self-reports on leadership (Eatough & Spector, 2013), as is suggested by the results of an experimental study (Johnson, 2009). In addition, affect towards the specific leader, such as liking the leader, has been found to be an important factor in employee ratings of transformational leadership (Brown & Keeping, 2005). Despite the affective implications of well-being, the leader-employee relationship has not gained attention from this perspective.

The follower-centric view is in agreement with the results of available studies that employed a multi-level approach to investigate the leader-employee well-being relationship. These studies have indicated that transformational leadership exerts its effects mainly, if not solely, at the individual level of analysis with respect to employee well-being (Kelloway, Turner, Barling, & Loughlin, 2012; Nielsen & Daniels, 2012). Thus, the fact that subordinates rate a shared leader within work units seems to be considerably less important to well-being outcomes than could be expected. In the present study, on the basis of results from follower-centric research, we essentially considered employee ratings of leadership behaviour as perceptions that, by definition, are subject to the rater's state of mind.

### ***Occupational Well-Being as a Resource***

With respect to occupational well-being, this study focuses on vigour and emotional exhaustion, which refer to the energy aspect of work engagement and occupational burnout. Vigour is

considered the key dimension of work engagement (Shirom, 2010) and emotional exhaustion the key dimension of burnout (Maslach, Schaufeli, & Leiter, 2001). As a positive indicator of well-being at work, vigour refers to high levels of energy and mental resilience while working, the willingness to invest in one's work, and persistence in the face of difficulties (Schaufeli, Salanova, González-Romá, & Bakker, 2002). As an indicator of ill-being, emotional exhaustion refers to feelings of overstrain, tiredness, and fatigue resulting from long-term involvement in an overly demanding work situation that depletes an individual's overall energy (Maslach et al., 2001). Although both vigour and exhaustion indicate the level of energy at work, they have been shown to be independent constructs to a certain degree, rather than endpoints of the same energy continuum (Demerouti, Mostert, & Bakker, 2010; Mäkikangas, Feldt, Kinnunen, & Tolvanen, 2012).

In addition to favourable leadership, occupational well-being (i.e. high vigour and low exhaustion) is also considered a resource for individuals in the current study. The resource perspective in this study draws on the conservation of resources (COR) theory (Hobfoll, 1989, 2002), which is a general stress theory addressing resource loss and resource gain as the mechanisms driving stress reactions. COR theory also forms the basis of the JD-R model (Bakker & Demerouti, 2007), which can be seen as an elaborate application of COR theory in the work domain. According to the basic tenet of the theory, people strive to retain, protect, and build entities that they value. These valued factors are labelled resources and they include physical objects, personal characteristics, conditions, and energies. In accordance with the definition of resources in COR theory (Hobfoll, 1989, 2002), energy at work is valued in its own right and aids in striving for other goals in a work context.

Approaching the leadership-employee well-being association from the follower-centric point of view, well-being can be assumed to be the primary resource. In conditions of high well-being, there are more resources available to invest in the relationship with one's leader, more energy to perform according to expectations, and positive interaction with the leader is more likely, compared to conditions of ill-being. In this way, employees' resources of leadership and well-being are linked to each other. According to COR theory, resources form resource caravans as individuals with strong resource pools can invest their resources for further gains (Hobfoll, 1989, 2002). Likewise, individuals without access to appropriate resources are more vulnerable to increased resource loss as they lack the resources to offset further losses (Hobfoll, 1989, 2002). As a result, resources are gained and lost in cycles. COR theory has been applied in numerous studies on burnout (Lee & Ashforth, 1996) and work engagement (Schaufeli, Bakker, & van Rhenen, 2009).

### ***Leadership Behaviours in Relation to Work Engagement and Burnout Among Employees***

Overall, the association between leadership and employee burnout has been examined intensively. Transformational leadership has been found to be associated with low burnout, or specifically, low exhaustion in employees (e.g. Corrigan, Diwan, Campion, & Rashid, 2002; Hetland, Sandal, & Johnsen, 2007; Kanste, Kyngäs, & Nikkilä, 2007). More recently, positive associations between transformational leadership and employee work engagement have also been reported (Ghadi et al., 2013; Salanova, Lorente, Chambel, & Martínez, 2011; Tims et al., 2011). Looking at engagement from a broader perspective, research on leadership and employee engagement has a long tradition, as noted by Parker and Griffin (2011). For example, the motivational effects of transformational leadership have been examined for decades (e.g. Bono & Judge, 2003). Although empirical research on authentic leadership in relation to employee well-being is still scarce, recent studies in nursing have found authentic leadership to relate positively with work engagement (e.g. Bamford, Wong, & Laschinger, 2013) and negatively with employee exhaustion (Laschinger, Wong, & Grau, 2013).

Concerning the dark side of leadership, a positive association between abusive supervision and employee exhaustion has been reported in several studies (Harvey, Stoner,

Hochwarter, & Kacmar, 2007; Tepper, 2000; Wu & Hu, 2009), but so far, abusive supervision seems not to have been examined in relation to work engagement (including vigour). In addition to the specific leadership styles mentioned above, leadership behaviour in the form of social support from supervisors has been negatively linked to employee exhaustion in numerous studies (see Lee & Ashforth, 1996, for a meta-analysis). In sum, based on the existing evidence, there is good reason to believe that constructive (transformational and authentic) leadership behaviours are negatively related to exhaustion and positively related to work engagement among employees, while destructive leadership behaviours (abusive supervision) are positively related to exhaustion and negatively related to work engagement. However, studies on these relationships have been variable-oriented in their approach and thus, have not provided information about subgroups of individuals nor changes in mean values of well-being and leadership across time.

### ***The Present Study***

The present study was guided by two aims. First, we aimed to identify latent classes of individuals with similar mean levels and mean-level changes in occupational well-being (vigour and exhaustion) across time. Second, we aimed to ascertain whether the latent classes differed from each other with respect to ratings of transformational, authentic, and abusive leadership behaviours.

With respect to the first aim, the exact number and characteristics of the classes of occupational well-being could not be hypothesized due to the exploratory nature of the study. Nevertheless, it was reasonable to expect that our data on Finnish employees from a variety of municipal work units and occupations would be heterogeneous with respect to patterns of occupational well-being over the 14-month follow-up time. Thus, we expected several latent classes to be identified. Regarding level of occupational well-being, prior longitudinal research has reported fairly high values of vigour and fairly low or moderate values of exhaustion in terms of whole sample means (e.g. Dunford, Shipp, Boss, Angermeier, & Boss, 2012; Schaufeli et al., 2009; Toppinen-Tanner, Kalimo, & Mutanen, 2002). On the basis of these results, a large proportion of the sample was expected to display good occupational well-being. In addition, an atypical small class exhibiting ill-being was likely to be found.

With regard to changes in occupational well-being, emotional exhaustion has been reported to vary more between individuals than within individuals across time (Dunford et al., 2012). However, distinct changes in mean values of both burnout and work engagement have been found in studies on subpopulations (Dunford et al., 2012; Mäkikangas et al., 2012). For instance, while Dunford et al. (2012) found burnout to be relatively stable across two years and five measurements, subgroups of job changers displayed changes particularly in emotional exhaustion and depersonalization. Furthermore, a person-centred study conducted among Finnish managers across a time-lag of two years revealed latent subpopulations of exhaustion and vigour separately (Mäkikangas et al., 2012). Latent classes demonstrating strong increases or decreases were rather small, while slight changes in either direction were more common. Based on the aforementioned studies, in the present study we expected distinct changes in occupational well-being to be rather atypical (occurring only in small latent classes) and the stable classes to include a majority of the employees.

Related to the second aim, on the basis of the tendency of resources to link with other resources as proposed in COR theory (Hobfoll, 1989, 2002), we expected that leadership ratings would differ between classes exhibiting different levels of occupational well-being. Specifically, employees displaying good well-being in terms of high vigour and low exhaustion would report more favourable leadership ratings (i.e. higher transformational and authentic leadership, and lower abusive supervision), as compared to employees displaying ill-being in terms of low vigour and high exhaustion. Furthermore, according to COR theory, a decreasing or increasing level of well-being can be interpreted as a resource loss or gain, respectively. Accordingly, we tentatively

expected that distinct changes in well-being would likely be associated with concurrent changes in perceived leadership. We expected this to apply especially to transformational leadership, due to the affective nature of transformational leadership ratings (Brown & Keeping, 2005; George, 2000).

### Methods

#### ***Participants and Procedure***

The current two-wave study conducted among Finnish employees working in various occupations in the public sector ( $N = 262$ ) is part of an international research project entitled, [Project name removed for anonymity]. As reported previously [Citation removed for anonymity], four out of nine municipalities that were initially contacted agreed to participate in the study. The human resources management in these four municipalities decided themselves which work units they would have participate in the study. Our main criterion for participation was that the participants worked in units that each had a leader.

The questionnaire data were gathered through paper and electronic questionnaires in the spring of 2011 and again in the early summer of 2012 with a mean time-lag of 14 months. The participants completed questionnaires on their work and psychological health and were asked to rate the behaviours of their nearest supervisor. They received information about the goals of the study with the assurance that responses would be treated confidentially and that participation was voluntary.

At the first questionnaire wave (T1), of the 891 eligible municipal employees contacted, 557 returned the completed questionnaire after two reminders, yielding a response rate of 62.5% (for T1 sample, see [Citation removed for anonymity]). Of the employees who responded to the first wave questionnaire, 47.2% responded to the second wave questionnaire (T2) (excluding two former subordinates who responded from a leader position at T2). The sample used in the present study consisted of 262 employees who responded to both questionnaires.

The majority of the two-wave participants were women (87.8%), with a mean age of 48.49 years (range = 21–65 years,  $SD = 9.09$ ). The highest completed level of education was comprehensive school for 10.8% of the participants, vocational qualifications or matriculation examination for 43.6%, a bachelor's degree or equivalent for 22.8%, and (at least) a master's degree or equivalent for 22.8%. The most common fields in which participants were employed were childcare (27.5%), teaching (20.2%), cleaning (14.9%), catering (8.4%), and property maintenance (8.4%). Most of the participants (96.2%) had a permanent work contract, and they primarily (75.6%) worked full-time (at least 37 hours a week). Of the 262 employees, 80.2% rated the same leader at both time points.

#### ***Attrition Analyses***

The attrition analysis revealed that the employees who continued participation at the second wave did not significantly differ from those respondents who left the study after the baseline ( $n = 294$ , i.e. dropouts) in terms of gender,  $\chi^2(1) = 2.932, p = .087$ , or age,  $t(544.731) = -.591, p = .555$ . However, dropouts and longitudinal cases differed somewhat with respect to education level,  $\chi^2(3) = 8.214, p = .042$ . Employees in the middle range of education (i.e. above comprehensive school but below master's level degrees) were more likely to take part in the study at T2 than were employees with lower or higher educational backgrounds. In addition, we found that dropouts and longitudinal cases did not differ in their ratings of the study variables (i.e. leadership and well-being) at T1. We concluded that the longitudinal data were not seriously biased as a result of those who did not participate after T1.



### **Measures**

*Vigour* was measured with three items (e.g. “At my job, I feel strong and vigorous”) from the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) for which construct validity has been found to be high in Finnish occupational samples (Seppälä et al., 2009). The items were rated on a scale from 0 (*never*) to 6 (*every day*).

*Emotional exhaustion* was measured with three items (e.g. “I feel emotionally drained from my work”) from the Maslach Burnout Inventory-General Survey (Maslach, Jackson, & Leiter, 1996), which has been validated in Finland (Kalimo, Hakanen, & Toppinen-Tanner, 2006). The items were rated on a scale from 0 (*never*) to 6 (*every day*).

*Transformational leadership* was assessed with the Global Transformational Leadership Scale (GTL; validated by Carless et al., 2000). The GTL measure includes seven items describing various transformational leadership behaviours (e.g. “My immediate superior treats staff as individuals, and supports and encourages their development”). The items were scored from 1 (*to a very small extent*) to 5 (*to a very large extent*).

*Authentic leadership* was assessed with the 16-item Authentic Leadership Questionnaire (Walumbwa et al., 2008) consisting of self-awareness, relational transparency, balanced processing of information, and internalized moral perspective (e.g. “My nearest superior demonstrates beliefs that are consistent with actions”). The rating scale varied from 0 (*not at all*) to 4 (*frequently, if not always*). Confirmatory factor analyses have revealed that the four subscales form a second-order factor of authentic leadership (Walumbwa et al., 2008).

*Abusive behaviours* were measured with the shortened abusive supervision scale, consisting of five items that depict active-aggressive interpersonal abuse by the supervisor (e.g. “My nearest superior puts me down in front of others”). The scale was originally developed by Tepper (2000) and the subscales reflecting active-aggressive and passive-aggressive forms of abusive supervision were discerned by Mitchell and Ambrose (2007). We used only the active-aggressive scale, as our interest was to include one clearly negative leader behaviour scale. The rating scale was from 1 (*strongly disagree*) to 7 (*strongly agree*).

All the measures were assessed at both T1 and T2. Correlations of the study variables and Cronbach’s alphas are presented in Table 1.

### **Statistical Analyses**

In this study, a person-centred approach was utilized to investigate the heterogeneity of the developmental patterns of occupational well-being. While the traditional variable-oriented approaches describe associations between variables (e.g. regression analysis), person-centred approaches identify distinct naturally occurring categories (i.e. latent classes) of individuals characterized by attributes that are similar within these categories and different between categories (Laursen & Hoff, 2006; Lubke & Muthén, 2005). Thus, person-centred approaches acknowledge the differences among individuals in the relations between variables, which means that characteristics are bundled differently in different types of individuals. In addition, person-centred analyses are well suited for examining group differences in patterns of development (Laursen & Hoff, 2006). After identifying the latent well-being classes, the relations of the classes with perceived leadership behaviours were investigated with traditional variable-oriented methods. Accordingly, the statistical analyses consisted of two main phases.

First, factor mixture modelling with the Mplus program version 7.11 (Muthén & Muthén, 1998–2012) was employed to extract latent classes of individuals that indicate similar patterns of level and change of occupational well-being (i.e. vigour and emotional exhaustion) between the two measurement points. Factor mixture modelling is a model-based method for analysing unobserved population heterogeneity (Lubke & Muthén, 2005). Compared with traditional cluster analysis, model-based mixture methods have the advantage that alternative models, and in particular solutions with varying numbers of latent classes, can be compared using several statistical criteria in order to determine the appropriate number of classes (Nylund,

Asparouhov, & Muthén, 2007; Wang et al., 2013). A factor mixture model consists of a single categorical latent variable, for which categories represent the clusters of participants in the sample, and one or more continuous latent variables (Lubke & Muthén, 2005).

In the present study, graphs on the intraindividual development in occupational well-being across time indicated that (a) there were considerable differences in the levels of vigour and exhaustion between the study participants, and (b) there were a lot of stable cases. Our primary interest was to capture the change that still occurred in vigour and emotional exhaustion during the study period, despite their relatively high stability. Accordingly, a level factor which models the individual variation in the level of occupational well-being across time was specified for both vigour and emotional exhaustion. Due to the level factors, which govern the stability of the constructs to a certain degree, change in the study variables emerges more clearly. The factor loadings of the observed variables were fixed to 1 at both time points. The method of estimation was maximum likelihood with robust standard errors (MLR).

Several criteria were used to determine the final number of latent classes (Nylund et al., 2007). In terms of the Akaike's Information Criteria (AIC), Bayesian Information Criterion (BIC), and sample-size adjusted BIC, the lowest value indicates the best solution. The Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR), Lo-Mendell-Rubin likelihood ratio test (LMR), and (parametric) bootstrapped likelihood ratio test (BLRT) compare solutions with different numbers of latent classes. A low  $p$ -value ( $<.05$ ) indicates that a model with  $k$  classes has to be rejected in favour of a model with at least  $k + 1$  classes ( $k + 1$  refers to the analysis which produces the test statistic). An entropy value close to 1 indicates that the mixture model has produced highly separated classes (Celeux & Soromenho, 1996). In addition, substantive interpretability and clarity of the class solutions were carefully evaluated when determining the final number of classes.

In the *second* phase, a multivariate repeated measures analysis in a general linear model (GLM) was conducted with IBM SPSS Statistics version 21. First, differences in vigour and exhaustion between the extracted latent classes were statistically tested, and second, the ratings of leadership behaviours were compared between the latent well-being classes. In these analyses, the well-being class was treated as a fixed factor and time as a repeated measure. When an interaction effect was found in the GLM analysis, the change in the variable (well-being or leadership variable) from T1 to T2 was examined with a separate paired sample  $t$ -test for each well-being class. To investigate the differences in the level of well-being or leadership behaviours between the well-being classes at T1 and T2, a one-way analysis of variance (ANOVA) was used. Differences in background factors were also examined, either with a chi-square test or with an ANOVA.

## Results

### *Identifying Latent Classes of Well-Being*

Table 2 presents the alternative class solutions with fit indices, test results, and number of employees per class. With regard to the various tests and indices, we decided to follow primarily the BIC and BLRT, which have been recognized as the most reliable criteria in simulation studies (Nylund et al., 2007; Tolvanen, 2007). The BIC was lowest at the solution of five latent classes. The BLRT became non-significant at the seven-class solution, suggesting that six classes fit the data best. Nevertheless, the significance level of the BLRT declined at the six-class solution, which can be interpreted as indicating partial support for five classes as the final model, in accordance with the BIC. In addition, the best log-likelihood values were replicated only up to five classes, indicating that models with more than five classes were not as reliable.

Considering theoretical meaningfulness and replication of the results, the final decision was made between the four-class and five-class solutions, which were scrutinized and compared. The five-class solution presented two classes that both demonstrated increasing vigour and decreasing exhaustion, one with steep changes ( $n = 4$ ) and the other with more

moderate changes ( $n = 30$ ). Because our goal was a parsimonious solution that could be replicated in other studies, and because the class of four participants with steeply improving well-being did not add to the theoretical interpretation of the results, we chose the four-class solution as the final model. In addition, the entropy value was highest at four classes. One of the classes was very small ( $n = 7$ ), but it consisted of exactly the same persons across the 4- to 7-class solutions, which strongly supports the distinct nature of this class. The overall distinctiveness of the four latent classes was ascertained by the average probabilities for most likely latent class membership, which varied between highly acceptable values of .885 and .986.

The selected four-class solution is illustrated in Figure 1, and the mean values of vigour and exhaustion in the whole sample and within the identified latent classes are presented in Table 3. The majority of participants ( $n = 207$ , 79.0%) belonged to Class 1, which was labelled “good well-being”. The participants in this class experienced high vigour and relatively low exhaustion at both measurement points. Class 2 displayed favourable change in well-being in the form of increasing vigour and decreasing exhaustion. Therefore, it was labelled as “improving well-being” ( $n = 21$ , 8.0%). Participants in Class 3 reported rather stable ill-being, as their vigour was low and exhaustion relatively high at both measurement points. Class 3 was thus entitled “low well-being” ( $n = 27$ , 10.3%). Class 4 (“deteriorating well-being”) is a small class that seemed to be a risk group, in that it displayed a clear unfavourable change in well-being in terms of decreasing vigour and increasing exhaustion ( $n = 7$ , 2.7%).

Multivariate GLM for repeated measures revealed a significant multivariate 4 (class)  $\times$  2 (time) interaction effect (Table 4). At the univariate level, the interaction effect was significant for both vigour and exhaustion. *T*-tests demonstrated significant changes in vigour and exhaustion in the improving and deteriorating classes, as well as an increase in vigour in the good well-being class (Table 3). In addition, the classes differed in the levels of vigour and exhaustion (see Tables 3 and 4 for details). Thus, the classes differed significantly from each other for vigour and exhaustion.

Finally, to better understand the extracted well-being classes, we analysed whether they differed with respect to background factors. No significant differences emerged in demographic variables (sex, age, education, and living with a partner) or employment-related variables (contract type, work schedule, working hours in a week, and tenure with the leader). The only significant background factor was change of the leader,  $\chi^2(3) = 10.733$ ,  $p = .013$ , which was most common in the stable low well-being class. In this class, in 11 out of 27 cases (40.7%), a different leader was rated at T2 as compared to T1. In contrast, the proportions in the good well-being class, the improving well-being class, and the deteriorating well-being class were 33 out of 207 (15.9%), 6 out of 21 (28.6%) and 2 out of 7 (28.6%), respectively. Nevertheless, due to the small sizes of the classes, testing of these background variables can be considered only tentative, as there were cells with as few as one participant.

#### ***Differences in Leadership Ratings Between the Latent Classes of Occupational Well-Being***

Multivariate GLM analysis was used to test the differences in perceived leadership behaviours between the latent classes of well-being (see Table 5 for GLM results and Table 6 for mean values). The results revealed a significant multivariate 4 (class)  $\times$  2 (time) interaction effect, which means that leadership ratings changed differently for the four classes. The univariate results revealed a significant interaction effect for all three of the leadership behaviours.

The participants in the improving well-being class and the deteriorating well-being class reported opposite trends in their leadership ratings (see Figure 2 for transformational leadership as an example). The improving well-being class demonstrated increasing transformational,  $t(20) = -.4.795$ ,  $p < .001$ , and authentic leadership behaviours,  $t(20) = -2.392$ ,  $p = .027$ , and decreasing abusive leadership behaviours,  $t(20) = 2.698$ ,  $p = .014$ , across time. Conversely, the deteriorating well-being class displayed decreasing trends in transformational and authentic leadership behaviours and an increasing trend in abusive leadership behaviours.

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However, these changes were statistically non-significant, which may be due to the lack of statistical power ( $n = 7$ ). Moreover, transformational leadership behaviours increased in the good well-being class,  $t(203) = -3.078$ ,  $p = .002$ , which indicated a significant increase in vigour as well. Thus, leadership ratings seem to change concurrently with well-being, and in the same direction with regard to favourableness of the change.

In addition to the interaction effect, a significant multivariate main effect of class on leadership was also found; however, there was no main effect of time, which is in accordance with the results on vigour and exhaustion within the well-being classes. At the univariate level, classes differed in levels of transformational and authentic leadership behaviours. The pairwise comparisons (performed separately at T1 and T2) revealed that at both time points, participants in the good well-being class reported transformational and authentic leadership behaviours at a higher level than participants in the low well-being class (Table 6). In addition, at T1, transformational leadership was lower in the improving well-being class as compared to the good well-being class. At T2, participants in the deteriorating well-being class rated their leaders significantly less transformational than participants in the good well-being class. Regarding abusive supervision, mean values in the low well-being class were only slightly and non-significantly higher than in the good well-being class. The distribution of abusive supervision was positively skewed, such that a large part of participants indicated little or no abusive supervision.

### Discussion

In accordance with the first aim of this study, four latent classes of occupational well-being were identified. Consistent with our expectations, the majority of participants (79.0%) exhibited good well-being in terms of high levels of vigour and relatively low levels of exhaustion. Partly contrasting our expectations, in this most typical pattern of well-being, vigour increased slightly during the study period of 14 months. An atypical pattern of well-being was also found which indicated rather stable ill-being in the form of vigour below the (sample) mean level and exhaustion above the (sample) mean level at both measurement points (low well-being, 10.3%). Regarding change, which was expected to occur in small latent classes, the improving well-being class (8.0%) and deteriorating well-being class (2.7%) demonstrated opposite trends in well-being. Vigour increased and exhaustion decreased in the improving well-being class, while vigour decreased and exhaustion increased in the deteriorating well-being class, which was thus identified as a risk group.

Regarding the second study aim (comparison of leadership ratings between the latent classes of well-being), we found congruence between well-being and perceived leadership in terms of level and change of the constructs. In accordance with our expectations and COR theory (Hobfoll, 1989, 2002), participants in the good well-being class reported more favourable perceived leadership than participants in the low well-being class with respect to transformational and authentic leadership at both measurement points. However, contrary to the hypothesis, the differences in abusive supervision were not significant between the classes. This may be due to the fact that abusive supervision was unusual and was not experienced at all by most of the participants. Furthermore, participants in the improving and deteriorating well-being classes reported increasing and decreasing transformational and authentic leadership behaviours, respectively. In a corresponding manner, they indicated decreasing and increasing abusive supervision. Hence, in accordance with the gain and loss cycles posited by COR theory (Hobfoll, 1989, 2002), resource gain in the form of favourable change, and resource loss in the form of unfavourable change in well-being, were both associated with congruent changes in perceived leadership as well.

Concerning the role of leadership in changes of occupational well-being, almost a third of employees in the change classes actually rated a different leader at T1 than at T2, denoting the possibility of a real change in leadership behaviour. However, the congruent changes of well-

being and perceived leadership could also be replicated in that part of the sample that rated the same leader at both measurement points ( $n = 210$ ). As it may be deemed unlikely that the same leader would change his or her behaviour as strongly as the leadership ratings in the change classes indicate, we interpret the results concerning the change classes to mainly support the notion of occupational well-being as the primary resource, in line with the follower-centric view. However, the change classes comprised only about one-tenth of the participants, and we can only speculate theoretically regarding the nature of the obtained relationships.

As expected, the ratings of transformational leadership, in particular, seemed to match the level and change of well-being. Specifically, in the increasing well-being and good well-being classes, transformational leadership increased significantly in congruence with increasing vigour (despite the same leader across time). In contrast, authentic leadership remained stable in the good well-being class. As the good well-being class demonstrated mild exhaustion symptoms in spite of high levels of vigour, it appears that transformational leadership may be better at increasing vigour than decreasing exhaustion. This finding is in line with the JD-R model's motivational path; resources are linked to work engagement (Schaufeli & Bakker, 2004). Moreover, the congruence of transformational leadership and vigour is also compatible with the results of several studies that have found relations between positive, but not negative, emotions and ratings of transformational (Brown & Keeping, 2005; Kelloway, Weigand, McKee, & Das, 2013) or charismatic leadership (Johnson, 2009). In particular, the results of an experimental study (Johnson, 2009) imply the possibility that perceptions of charismatic/transformational leadership may be inflated by a positive affective state of employees.

Altogether, the results of this study strongly suggest that well-being and leadership ratings are tightly interwoven phenomena. While causality of the relations remains an open issue and a variety of mechanisms may exist behind the observed congruence of leadership ratings and well-being, the congruence itself is in accordance with the idea of resource caravans in COR theory (Hobfoll, 2002). According to COR theory, individuals equipped with appropriate resources (e.g. constructive leadership, good well-being) can invest resources for development and growth instead of being forced to defend against further resource losses.

The observed congruence can be approached from both leader-centric and follower-centric points of view. From the leader-centric perspective and in accordance with the JD-R model (Bakker & Demerouti, 2007), the well-being of employees can be enhanced by motivational and supportive acts of transformational and authentic leaders, both of which may convey, in different forms, a sense of purpose and meaning to their employees. Conversely, when leaders fail to display transformational and authentic leadership behaviours, and perhaps act in abusive ways, employees are at risk for decreasing enthusiasm and developing burnout symptoms, particularly in stressful situations when work demands are high and resources few. For a majority of the participants in this study, leadership seemed to fulfil its function as a resource, while those for whom it did not, experienced low or decreasing well-being.

From the follower-centric perspective, followers' well-being may be primary for the resource gain and loss cycles with regard to leadership. Energy at work is a key resource, without which it is difficult to reach work goals and relate favourably to the work environment. Concerning perceptions, exhausted employees may find it hard to see the leader in positive light. According to de Lange et al. (2004), the mechanisms of gloomy perception and rosy perception potentially explain the reversed relations between perceived work characteristics, including supervisor support, and health across time. Beyond employee perceptual issues, leader behaviour towards an exhausted follower may actually be reactive and diminish in positive characteristics, as discussed in one of the early studies on leadership and employee well-being (van Dierendonck et al., 2004).

The present study provides added value to the understanding of the leadership-employee well-being relationship. Without identifying latent subgroups of employees with different well-being patterns, we would not know how leadership ratings are affected when

well-being changes. The synchronous changes in perceived leadership and well-being observed in our study, together with the relatively high overall stability of the well-being constructs (e.g. Schaufeli et al., 2009) may explain why in prior longitudinal studies, leadership has typically not explained additional variance in employee well-being across time (i.e. cross-lagged effects). The pattern of results found in the current study emphasizes the timing of observations in longitudinal research on leadership and employee well-being. As Kelloway and Francis (2013) suggest regarding occupational health psychology in general, more descriptive studies on change (as opposed to explanatory studies) should be conducted “in order to understand the nature and timing of change in the variables we study” (p. 379). In our view, this pertains particularly well to research on leadership and employee well-being.

### ***Limitations and Suggestions for Further Research***

Aside from the strengths of longitudinal design and the innovative approach to leadership-employee well-being research, this study has some limitations that should be considered when interpreting the results. First, while self-report may be the most appropriate method for gathering information on the subjective experience of an employee regarding his or her leader’s behaviour, to date little is known about the degree to which the association between leadership (as rated by employees) and employee well-being is attributable to confounding of mood and other affect factors (Eatough & Spector, 2013). Therefore, to gain further understanding of the phenomena and to address interventions in an effective way, more objective measures of leadership behaviour (e.g. colleague ratings) should be used in addition to employee self-report measures.

Second, the sample characteristics may limit generalizability of the results. The sample in this study was rather small, especially with regard to the purpose of identifying latent classes and examining background factors in these classes. It is likely that with a larger sample, a greater number and variety of latent classes would have been identified. In addition, with the strongly female-dominated sample, it is unclear to what extent the results apply to men. Moreover, the response rate was rather low, as only 47% of the first wave participants continued participation at the second questionnaire wave. Therefore, our results should be replicated in future longitudinal studies with larger samples.

Third, to enhance understanding of the interwoven relationships between well-being and leadership, it would be useful for future studies to focus on what really happens between leaders and employees. This call could be fulfilled, for instance, by diary studies focusing on interactions between leaders and followers. Finally, we concur with calls for more research on affect and emotion in both leader- and follower-centric leadership research (Brown & Keeping, 2005; George, 2000). In our view, this pertains particularly to research on leadership and employee well-being and concerns both substantive relationships between leaders and followers, as well as possible confounding due to affective factors.

### ***Conclusion***

In sum, our study demonstrated that the resources of occupational well-being and perceived leadership are interwoven within the latent classes of occupational well-being. The results based on person-centred analysis revealed even stronger congruence than could be observed by examining data from the whole sample. First, consistent differences in levels were found such that individuals with better well-being reported more favourable leadership behaviours. Second, when well-being changed, ratings of both positive and negative leadership changed concurrently in a congruent direction with well-being. Thus, the results of this study support the notion of resource caravans outlined in COR theory and highlight the role of energy at work as a resource. With regard to practical implications for organizations, straightforward conclusions on leaders as the cause of employee well-being are not warranted on the basis of current knowledge. It is important to note that employee ratings of the behaviours of their nearest superiors may not be

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independent of the effect of employee well-being as such. Therefore, we suggest that when leadership is rated by employees, employee well-being and other work-related factors affecting well-being should also be assessed. In particular, the ratings of transformational leadership corresponded with patterns of vigour. Further research may reveal whether this finding is attributable to the resource enhancing aspects of transformational leadership, or to followers' affective factors in leadership perception and evaluation.

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Table 1. *Correlations and Cronbach's Alphas of the Study Variables*

	1	2	3	4	5	6	7	8	9	10
1. Vigour T1	.87									
2. Exhaustion T1	-.45***	.87								
3. Transf. leadership T1	.32***	-.18**	.90							
4. Authentic leadership T1	.31***	-.15*	.86***	.94						
5. Abusive supervision T1	-.16**	.11	-.44***	-.47***	.91					
6. Vigour T2	.68***	-.29***	.20**	.22***	-.06	.88				
7. Exhaustion T2	-.23***	.54***	-.12	-.14*	.12	-.43***	.83			
8. Transf. leadership T2	.22***	-.11	.56***	.55***	-.34***	.32***	-.27***	.90		
9. Authentic leadership T2	.20**	-.05	.53***	.62***	-.38***	.29***	-.22***	.88***	.94	
10. Abusive supervision T2	-.05	.03	-.30***	-.33***	.55***	-.13*	.23***	-.51***	-.56***	.91

Note.  $N = 262$ . Transf. = Transformational. T1 = Wave 1; T2 = Wave 2. Cronbach's alphas are presented on the diagonal.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 2. *Fit Indices and Likelihood-Ratio Tests for Different Class Solutions (Factor Mixture Modelling)*

Number of classes	LogL (no. of free parameters)	AIC	BIC	Adj. BIC	VLMR	LMR	BLRT	Class sizes based on the most likely latent class membership	Entropy
1	-1486.619 (13)	2999.238	3045.627	3004.411	-	-	-	262	-
2	-1445.382 (18)	2926.765	2990.995	2933.927	<b>0.0460</b>	0.0501	0.0000	38, 224	0.907
3	-1421.590 (23)	2889.179	2971.251	2898.331	0.0718	0.0779	0.0000	219, 35, 8	0.934
4	-1399.734 (28)	2855.467	2955.381	2866.608	0.4749	0.4825	0.0000	207, 21, 27, 7	<b>0.938</b>
5	-1381.507 (33)	2829.015	<b>2946.770</b>	2842.146	0.1200	0.1241	0.0000	201, 20, 7, 30, 4	0.932
6	-1370.171 (38)	2816.342	2951.939	2831.462	0.7790	0.7855	<b>0.0128</b>	7, 6, 4, 29, 26, 190	0.924
7	-1361.076 (43)	<b>2808.152</b>	2961.591	<b>2825.262</b>	0.1238	0.1273	0.1017	5, 20, 137, 7, 29, 60, 4	0.864

*Note.* AIC = Akaike's Information Criteria; BIC = Bayesian Information Criterion; Adj. BIC = sample-size-adjusted BIC; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR = Lo-Mendel-Rubin likelihood ratio test; BLRT = (parametric) bootstrapped likelihood ratio test. Figures indicating the most statistically favourable class solution are in bold.

Table 3. *Means for Vigour and Exhaustion Across the Whole Sample and Within the Latent Classes.*

	Scale	Whole sample		(1) Good well-being (n = 207, 79.0%)		(2) Improving well-being (n = 21, 8.0%)		(3) Low well-being (n = 27, 10.3%)		(4) Deteriorating well-being (n = 7, 2.7%)	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Well-being		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Vigour	0-6	4.72 (1.08)	4.89 (0.98)	5.14 (0.59)	5.21 (0.56)	2.98 (0.59)	4.98 (0.62)	2.74 (0.82)	2.83 (0.79)	5.19 (0.54)	3.05 (0.45)
Exhaustion	0-6	2.31 (1.43)	2.13 (1.34)	2.10 (1.32)	1.98 (1.24)	3.11 (1.84)	1.60 (1.22)	3.49 (1.18)	3.27 (1.41)	1.67 (1.28)	3.62 (1.27)

*Note.* T1 = Wave 1; T2 = Wave 2. Pairwise comparisons using Bonferroni's (equal variances assumed) or Tamhane's test (equal variances not assumed, only for exhaustion at T1): at T1, vigour (1, 4 > 2, 3); exhaustion (3 > 1, 4). At T2, vigour (1, 2 > 3, 4); exhaustion (1, 2 < 3, 4). Paired sample *t*-tests: Class 1: vigour T1 < T2, *p* = .048. Class 2: vigour T1 < T2, *p* < .001; exhaustion T1 > T2, *p* < .001. Class 4: vigour T1 > T2, *p* < .001; exhaustion T1 < T2, *p* = .011.

Table 4. Differences in Vigour and Exhaustion Between the Four Latent Classes (GLM for Repeated Measures)

	Class effect				Time effect				Class × time effect			
	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$
Multivariate	44.262	6, 514	<.001	.341	.017	2, 256	.983	.000	37.473	6, 514	<.001	.304
Univariate												
Vigour	176.719	3, 257	<.001	.674	.002	3, 257	.969	.000	130.727	3, 257	<.001	.604
Exhaustion	11.246	3, 257	<.001	.116	.026	3, 257	.871	.000	14.944	3, 257	<.001	.149

Table 5. Differences in Leadership Ratings Between the Four Latent Classes (GLM for Repeated Measures)

	Class effect				Time effect				Class × time effect			
	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$
Multivariate	2.322	9, 759	.014	.027	1.023	3, 251	.383	.012	3.421	9, 759	<.001	.039
Univariate												
Transformational	6.101	3, 253	.001	.067	.599	1, 253	.440	.002	7.072	3, 253	<.001	.077
Authentic	4.504	3, 253	.004	.051	.000	1, 253	.997	.000	3.190	3, 253	.024	.036
Abusive	.940	3, 253	.422	.011	1.174	1, 253	.280	.005	6.260	3, 253	<.001	.069

Table 6. Means of Leadership Ratings Across the Whole Sample and Within the Latent Classes of Well-Being

Leadership behaviours	Scale	Whole sample		(1) Good well-being ( <i>n</i> = 207, 79.0%)		(2) Improving well-being ( <i>n</i> = 21, 8.0%)		(3) Low wellbeing ( <i>n</i> = 27, 10.3%)		(4) Deteriorating well-being ( <i>n</i> = 7, 2.7%)	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
		<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Transformational	1–5	3.19 (0.82)	3.36 (0.78)	3.29 (0.78)	3.44 (0.75)	2.63 (0.83)	3.33 (0.61)	2.81 (0.82)	2.95 (0.84)	3.29 (1.04)	2.57 (1.03)
Authentic	0–4	2.46 (0.73)	2.53 (0.74)	2.54 (0.69)	2.59 (0.72)	2.10 (0.66)	2.46 (0.70)	2.12 (0.80)	2.17 (0.79)	2.50 (1.03)	2.04 (0.79)
Abusive	1–7	1.44 (0.89)	1.46 (0.93)	1.39 (0.82)	1.43 (0.91)	1.99 (1.56)	1.40 (0.98)	1.45 (0.62)	1.56 (0.96)	1.20 (0.45)	2.09 (1.37)

Note. Pairwise comparisons using Bonferroni's (equal variances assumed) or Tamhane's test (equal variances not assumed, only for abusive supervision at T1): at T1, transformational leadership, 1 > 2, 3; authentic leadership, 1 > 3. At T2, transformational leadership, 1 > 3, 4; authentic leadership, 1 > 3.

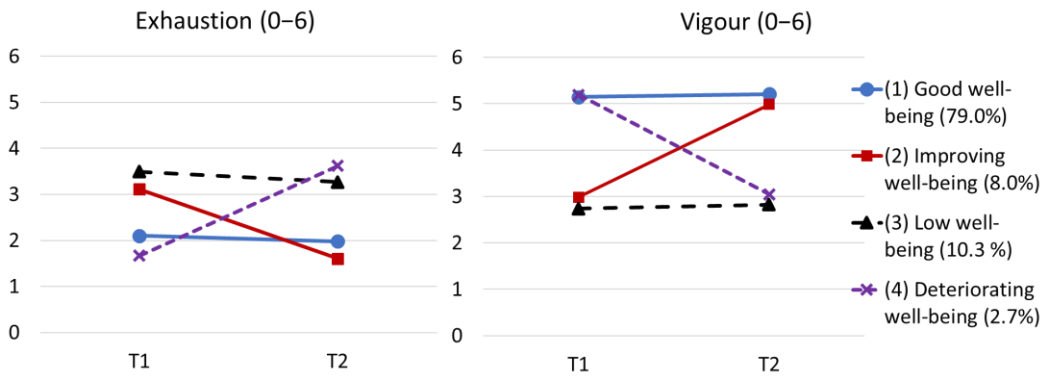


Figure 1. Mean levels of vigour and exhaustion within the four latent classes (mean time lag 14 months).

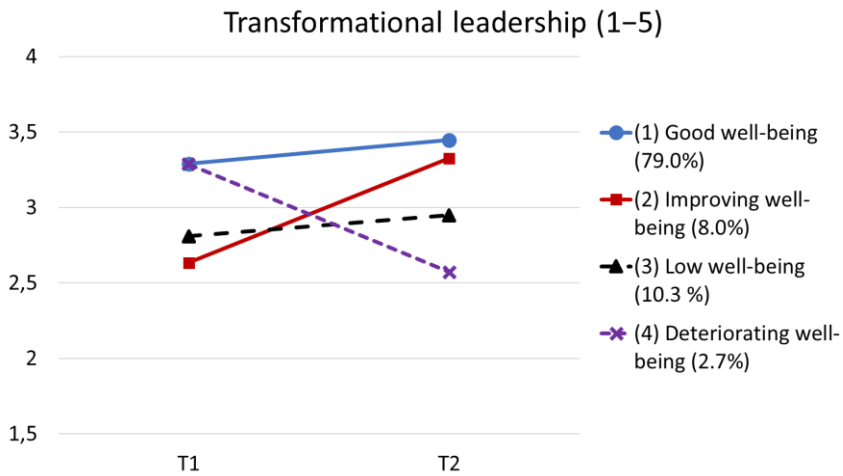


Figure 2. Mean levels of transformational leadership within the four latent classes of occupational well-being.



ORIGINAL ARTICLE

# Back to Basics: The Relative Importance of Transformational and Fair Leadership for Employee Work Engagement and Exhaustion

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This study contributes to the literature on the supervisors' role in employee well-being by drawing on two separate lines of research: transformational leadership and organizational justice. The purpose of the study was to investigate the *unique* contributions of transformational and fair leadership (justice behaviours of supervisors) on work engagement and exhaustion among employees within the framework of the Job Demands-Resources model (Bakker and Demerouti, 2007). In determining the unique contributions, we additionally acknowledged the role of work characteristics. A questionnaire study was conducted among Finnish municipal employees in a variety of occupations (N = 333, 87% women). The analyses comprised fixed-order regression models with latent variables using Cholesky decomposition (de Jong, 1999) to examine unique contributions of highly correlating latent factors. The results showed no additive effects of transformational leadership above fair leadership in relation to work engagement, that is, fair leadership explained work engagement equally well. However, unfair leadership explained incremental variance in exhaustion beyond low levels of transformational leadership. Thus, our results suggest that transformational and fair leadership are interchangeable with respect to positive well-being, while concerning health impairment, unfair leadership is more detrimental than a lack of transformational leadership. Both forms of leadership demonstrated relationships with employee well-being that were partly independent from work characteristics (role clarity, autonomy and workload), thereby corroborating the specific role of leadership. Implications of the high empirical overlap between transformational and fair leadership are discussed from the point of view of leadership measurement and interpersonal affect within it.

**Keywords:** transformational leadership; organizational justice; interpersonal justice; work engagement; exhaustion; work characteristics

## Introduction

Considering the growing body of literature demonstrating the enhancing effects of transformational leadership on employee well-being (Arnold and Connelly, 2013; Skakon et al., 2010), very little is known about what is the added value of transformational leadership compared to other focal aspects of leadership, such as justice behaviours of supervisors. In this study, guided by the Job Demands-Resources (JD-R) model (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004), we aim to explicate the *unique* relevance of perceived transformational and fair leadership in relation to employee work engagement and exhaustion. In a further comparison, we investigate the unique roles of fair and transformational leadership in relation to employee well-being while acknowledging the effects of other job demands and job resources. Overall, this study serves the principle of parsimony with respect

to leadership concepts in the research of employee well-being.

Leadership is widely acknowledged to play an integral part in employees' accomplishment of work tasks, motivation, development and well-being (e.g. Judge and Piccolo, 2004). Among specific leadership styles, transformational leadership has reached an established position as the desirable leadership style with regard to employee well-being in occupational psychology research (for reviews, see Arnold and Connelly, 2013; Skakon et al., 2010). However, the added value of transformational leadership on employee well-being can be justified only if it explains unique variance in employee well-being beyond other established leadership aspects. Prior studies have not empirically investigated, possibly due to the multicollinearity problems, whether transformational and other aspects of leadership actually are complementary or redundant with respect to employee well-being outcomes.

In this study we adopt this goal and build on two separate lines of research, i.e., literature on transformational leadership and literature on supervisor related justice that

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derives from organizational justice research (e.g. Kivimäki et al., 2003; Kivimäki et al., 2005; Colquitt et al., 2013). Of importance for this goal, we overcame the problem of multicollinearity by employing the Cholesky decomposition in SEM framework (de Jong, 1999). Thereby it was possible to examine the extent to which transformational and fair aspects of leadership are empirically interchangeable when employee well-being is the criterion. As both transformational and fair (just) leadership have been shown to be associated with favourable employee health and well-being outcomes, integration of these lines of research and explication of their associations with employee well-being seem relevant. From a practical point of view, it is important to ascertain whether there is empirical evidence for encouraging leaders to adopt a full-scale transformational leadership framework in an effort to enhance employee well-being, or whether the same level of well-being can be attained with more general elements in leadership.

#### ***Leadership in the Job Demands-Resources model***

The essence of transformational leadership may be summarized such that transformational leaders are able to make followers aware of the importance and higher purpose of the work, transcend focus from self-interest to the common good and, as a result, achieve more than was initially expected (Bass, 1985; Yukl, 1999). To describe transformational leadership on a more behavioural level, these kind of leaders convey an appealing vision of the future, provide an admirable role model with clearly expressed values, encourage thinking about issues in new ways and foster trust and involvement among group members while also providing individualized support for employees (Carless, Wearing and Mann, 2000).

With regard to fair leadership, justice is a profound aspect in organizational life and the importance of fair, respectful and considerate interpersonal treatment for employee health and well-being has been well-documented (e.g. Elovainio et al., 2006; Kivimäki et al., 2005; Robbins, Ford and Tetrick, 2012). While immediate supervisors have traditionally been considered to display only interactional aspects of justice (respectful treatment and justification with information), more recent studies have pointed to the relevance of examining immediate supervisors as the sources of other justice dimensions besides interactional (see Colquitt et al., 2013, for a meta-analysis; Liao and Rupp, 2005). The meta-analysis by Colquitt et al. (2013) reveals that multiple ways of referencing the justice experiences have been used in the justice literature, with many of these being directly relevant for supervisors, such as a reference to performance evaluation. In the present study fair leadership refers to focal justice aspects in daily supervisory work that are each recognised by earlier research (Colquitt et al., 2013; Elovainio et al., 2006; Kivimäki et al., 2005; Lusa et al., 2006; Vincent, 2012), such as perceived fairness in respectful, equal treatment, distribution of work and evaluation of performance.

Both transformational and fair leadership refer to constructive leader behaviours that fit the broad definition of job resources in the JD-R model (Bakker and Demerouti, 2007). In this regard, it is essential to note that in the JD-R

model, job demands and job resources refer not only to task-level work characteristics but to all physical, psychological, social, and organizational aspects of the job that influence well-being. As central social aspects of work environment, these leadership behaviours may serve as resources that facilitate achievement of work goals and can be considered important for employees' internal motivation by promoting personal growth, learning and development. In the motivational process proposed by the JD-R model, job resources foster the motivational aspect of well-being, work engagement, which in turn is posited to promote positive organizational outcomes.

Job demands, in turn, refer to all those physical, psychological, social, or organizational aspects of work that require sustained effort or skills and are therefore associated with physiological and psychological costs (Bakker and Demerouti, 2007). In the health-impairment process, high demands and lack of adequate resources drain an employee's energy reserve and lead to burnout symptoms and potentially, to other health problems in the long run (Bakker and Demerouti, 2007; Schaufeli and Bakker, 2004). There is one important difference to consider regarding transformational and fair leadership as job resources: it is difficult to think about a lack of fairness without thinking about unfairness. In accordance with this, typically in the organizational justice literature, only justice is explicitly inquired and injustice is inferred from low justice levels (e.g., Colquitt et al., 2013; Robbins et al., 2012). When dealing with unfair leadership, employees need to exert additional psychological effort to cope with the situation. On this basis, we assume in this study that a breach of fairness resembles more of a job demand, whereas a lack of transformational leadership is best conceived as a lack of a resource.

#### ***Transformational leadership and employee well-being***

In particular, transformational leadership theory is based on the premise of higher motivational value (Bass, 1985), an assumption which has received partial support in empirical studies (Bono and Judge, 2003; Judge and Piccolo, 2004; Piccolo and Colquitt, 2006). Although transformational leadership theory does not directly pertain to employee well-being, several if not all facets of transformational leadership can be seen to facilitate positive, particularly motivational, aspects of well-being. For example, particularly by adhering to a higher level purpose of the work, behaving in ways that prompt employees to identify themselves with the leader, and by conveying an attractive vision of the future, transformational leaders may elicit healthy experiences of meaningfulness among their employees (Arnold et al., 2007; Ghadi, Fernando and Caputi, 2013; Piccolo and Colquitt, 2006). Furthermore, by paying individualized attention to the developmental needs of followers, transformational leaders provide supportive actions more directly (Bass, 1985).

In the current study, we examine the motivational aspect of occupational well-being, work engagement and, on the other side, exhaustion as an indicator of employee ill-being. Work engagement refers to "a positive, fulfilling, work-related state of mind that is characterized by vigor,

dedication and absorption" (Schaufeli et al., 2002: 74). Regarding the key dimensions that are examined in the present study (González-Romá et al., 2006; Schaufeli and Bakker, 2004), vigour is depicted by high levels of energy and mental resilience while working, whereas dedication refers to identification with one's work, that is, experiencing a sense of significance, enthusiasm, inspiration, pride and challenge (Schaufeli et al., 2002). Exhaustion is characterized by feelings of being overextended and depleted of emotional and physical resources, that is, a lack of energy (Maslach, Schaufeli and Leiter 2001). Underscoring the significance of lack of energy, exhaustion is a key component of occupational burnout, a work-related psychological syndrome also consisting of cynicism and lowered professional efficacy beliefs (Maslach et al., 2001; Schaufeli and Buunk, 1996).

In earlier studies on transformational leadership and employee burnout, bivariate correlations have consistently shown that transformational leadership is associated with low levels of exhaustion. In multivariate models, however, other leadership or work attributes (e.g. laissez-faire leadership, transactional leadership and various work stressors) have explained more unique variance in exhaustion than transformational leadership (e.g. Hetland, Sandal and Johnsen, 2007; Kanste, Kyngäs and Nikkilä, 2007; Stordeur, D'Hoore and Vandenberghe, 2001). In sum, these findings indicate that while it may be true that transformational leadership promotes employee motivation and positive well-being, a lack of transformational leadership does not appear to increase employee ill-being to the same extent as psychosocial work stressors, such as workload and role ambiguity (Stordeur et al., 2001).

Drawing on the JD-R model, these findings can be understood through the differing roles of demands and resources in well-being and ill-being: a lack of resources is not as detrimental as are demands in terms of employee ill-being (Bakker and Demerouti, 2007). Specifically, in burnout research it has been suggested that exhaustion is particularly predicted by job demands, while disengagement (cynicism) develops in response to lack of resources (Demerouti et al., 2001). The dominating role of job demands in employee ill-being is also in accordance with the notion of the primacy of resource loss in the conservation of resources (COR) theory (Hobfoll, 1989). In fact, the JD-R model draws on the principles of the COR theory and applies these in work settings (Bakker and Demerouti, 2007). The COR theory posits that the essence of the stress process is either potential or actual loss of valued resources, and resource gain is subsidiary to resource loss in regard to well-being and health (Hobfoll, 2001). Accordingly, whereas transformational leadership may foster resource gain, aspects of work that demand energy and effort are more conducive to strain reactions than mere lack of transformational leadership.

Concerning the positive side of occupational well-being, research on transformational leadership and work engagement is still scarce. Nevertheless, the results thus far seem promising with respect to the assumptions of transformational leadership theory (Bass, 1985). Tims, Bakker and Xanthopoulou (2011) found in a diary study

that day-level transformational leadership was related to day-level work engagement among employees through day-level optimism. Similarly, employees' perceptions of meaning in work was found to partially mediate the relationship between transformational leadership and work engagement, providing further support for motivating effects (Ghadi et al., 2013).

#### ***Fair leadership in relation to employee health and well-being***

On a general level, the organizational justice literature has yielded a considerable amount of evidence on the effect of organizational fairness on a variety of employee health and well-being outcomes, both in terms of psychological strain and physical health problems (for a meta-analysis, see Robbins et al., 2012). Recent meta-analytic findings point to the particularly prominent role of the immediate supervisors in forming the experience of justice among employees (Colquitt et al., 2013). The results suggested that justice dimensions that were measured with reference to a supervisor as the source of justice were generally more strongly related to a variety of outcomes as compared to organization-focused justice perceptions, thereby providing strong support for the focus on supervisors as sources of justice in terms of various justice dimensions (Colquitt et al., 2013).

In accordance with this, the results on interactional justice emphasize the role of nearby-leaders, as often in organizational justice research only this dimension is inquired with reference to a supervisor. Of importance to the present study, the meta-analysis by Robbins et al. (2012) showed that burnout and stress were predicted by interactional injustice beyond procedural injustice (fair procedures in decision making) and distributive injustice (fair outcomes of those processes). Similarly, findings at the work-unit level support the predominant role of interactional injustice in burnout (Moliner et al., 2005).

It is important to note that the evidence in support of the relationship between fairness of immediate supervisors and employee health and well-being derives from robust longitudinal studies with objective outcome measures, such as medically certified sickness absences (Kivimäki et al., 2003), coronary heart disease (Kivimäki et al., 2005), and cardiovascular deaths (Elovainio et al., 2006). Moreover, there is some evidence from intervention studies (Greenberg, 1993; Skarlicki and Latham, 1997). Concerning health and well-being related outcomes, interactional justice training of supervisors was found to alleviate insomnia among nurses who suffered pay cuts (Greenberg, 2006). Furthermore, in a multilevel study, supervisor-referenced justice as a shared perception in a work group was related to sleep disturbances at the group level (Way, Jimmieson and Bordia, 2014).

The specific mechanisms whereby unfair treatment in organizations may lead to poor health and well-being have been elucidated by Ford and Huang (2014). Of interest to the present study, injustice engenders threat appraisals that are crucial in stress reactions and particularly decreases employees' trust that their supervisor and organization will not harm them. Supervisor-related

justice is indeed a strong predictor of trust in the supervisor (Colquitt et al., 2013). Moreover, the adverse effects of injustice may derive from a threat to one's self-worth, or, alternatively, from a threat to the basic need for morality. The resulting moral emotions (anger, disgust, and contempt) may have unhealthy consequences (Ford and Huang, 2014).

As justice has been most often investigated in relation to negative health and well-being outcomes, research on leader fairness in relation to employee work engagement is very limited. We could, however, locate two studies suggesting that justice is important for work engagement (Hansen, Byrne and Kiersch, 2014; Moliner et al., 2008). The psychological benefits of fairness can be understood through its fundamental value in organizational life (e.g. Kivimäki et al., 2005). Contrasting with the potential influence mechanisms of injustice outlined above (Ford and Huang, 2014), fair leadership certainly increases trust in the supervisor and can be seen to foster healthy self-worth among employees. Additionally, there is meta-analytic evidence that fairness relates not only to negative but also to positive affective states among employees (Colquitt et al., 2013).

In sum, despite both transformational and fair leadership displaying associations with employee health and well-being, there is a gap in the knowledge concerning the potentially different effects of transformational and fair leadership.

#### ***Are the effects of transformational and fair leadership different?***

Studies that have investigated transformational leadership together with justice (DeCremer, van Dijke and Bos, 2007; Hansen et al., 2014) have demonstrated that transformational leadership is closely related to justice perceptions of employees, especially interactional justice (DeCremer et al., 2007). High correlations reported in these studies (.35–.81) indicate that empirical overlap is evident and consequently emphasize the need to investigate whether transformational and fair leadership actually show incremental validity in relation to employee well-being.

Fairness can be considered as a base for the relationship between a leader and a follower, or “a psychological platform on which transformational leadership is built (at least partly)” (DeCremer et al., 2007: 1788). Transformational leaders are, by definition, expected to show high levels of integrity, acting consistently with the values they convey, though there has been much theoretical discussion on the ethicality and unethicity of transformational leaders (Brown and Treviño, 2006). In contrast, fair leaders are just but they are not expected to display, for example, inspirational or intellectually stimulating transformational leadership behaviours, nor are they assumed to be respected and admired the way transformational leaders are. In essence, there is more to transformational leadership than fairness. In terms of the JD-R model, followers of transformational leaders are provided with more work engagement stimulating resources inherent in leadership compared to followers of leaders that demonstrate only fair behaviours.

**Hypothesis 1.** Transformational leadership is positively related to work engagement after controlling for fair leadership.

The role of leadership with regard to employee ill-being may differ from its role in positive well-being. As stated, the JD-R model posits that job demands are dominant in comparison to a lack of resources in the health impairment process. In the present study, we propose that a lack of fair leadership implies a breach of expectations in a very basic leadership dimension, justice, constituting a job demand for the subordinates. More specifically, injustice from the supervisor is best conceived as a hindrance type of a demand. Hindrance demands hinder goal attainment and potentially thwart personal growth and development, and due to their frustrating character, they are expected to trigger negative emotions (Crawford, LePine and Rich, 2010). As opposed to challenge demands, hindrance demands provide no potential future gains, despite the effort invested in meeting the demand. Therefore, employees who perceive their leaders to show less than optimal levels of fairness should be more prone to develop exhaustion symptoms, above the effect of low level transformational leadership.

**Hypothesis 2.** Fair leadership is negatively related to exhaustion after controlling for transformational leadership.

#### ***The role of other job resources and demands in employee well-being***

Although a considerable number of studies have demonstrated the effect of various job demands and resources on employee burnout and work engagement (Bakker and Demerouti, 2007; for reviews, see Crawford et al., 2010; Halbesleben, 2010; Lee and Ashforth, 1996), studies on leadership and employee well-being have not typically focused on other job resources or demands. In statistical terms, this leads to the omitted variable bias (e.g. Kline, 2011) and, as a result, the unique role of leadership has remained unclear. In an attempt to set fair and transformational leadership in a broader context of central job demands and job resources, in the current study, we incorporate workload as a job demand, whereas autonomy and role clarity are included as job resources. These three work characteristics are all well-established as having an impact on employee well-being. For instance, research on burnout has shown that it is related to objectively and subjectively measured workload, role ambiguity and role conflict and a lack of autonomy (for reviews, see Schaufeli and Buunk, 1996; Lee and Ashforth, 1996).

Regarding job resources, autonomy, denoting the freedom to schedule one's work, make decisions and choose work methods, has had a central place in motivational work design approaches for several decades (Morgeson and Humphrey, 2006). Autonomy is one of the most important job-level aspects that fuel work engagement (Crawford et al., 2010; Halbesleben, 2010). Role clarity, in turn, refers to the extent to which employees are aware of their roles, responsibilities and related expectations

(Pejtersen et al., 2010). According to the JD-R model, these are important job resources that facilitate goal attainment and play a focal role especially in the motivational path by fostering work engagement.

Workload refers to the amount of work that has to be done in a certain time frame and its associated time pressure, constituting a job demand (Spector and Jex, 1998). This implies investment of energy on the part of the employee and sustained efforts to meet the job demands may deplete an individual's resources, especially when counterbalancing job resources are not present (Schaufeli and Bakker, 2004). Accordingly, the strong association between workload and exhaustion has been demonstrated by a meta-analysis (Lee and Ashforth, 1996). In terms of work engagement, however, a meta-analysis has indicated that workload (work overload) was not related to either vigour or dedication (Halbesleben, 2010).

In the present study, we expect that the impact of fair and transformational leadership on employee well-being is not redundant to work characteristics. Considering the constructs of transformational and fair leadership, the (assumed) impact leaders have on employee well-being should manifest itself above the constructs that aim to capture aspects of the work itself as perceived by the job incumbents. If the role of these leadership dimensions is redundant to well-established work characteristics, the relevance of specific leadership styles with respect to employee well-being could be questioned. For example, transformational leadership theory is essentially based on the idea that the leader conveys a higher purpose for the work and the followers adopt this commitment (Bass, 1985; Yukl, 1999). Consequently, if transformational leadership influences employee well-being, this should occur not only at the level of work characteristics, but also on a more psychological level, referring, for example, to enhanced meaningfulness (Arnold et al., 2007; Ghadi et al., 2013) and optimism (Tims et al., 2011) at work. Therefore, we expect that transformational leadership exerts a unique influence on work engagement. We do not present a hypothesis on the relationship between transformational leadership and exhaustion above job demands, as job demands are more influential in employee strain than are job resources (Bakker and Demerouti, 2007), including transformational leadership (Stordeur et al., 2001).

**Hypothesis 3.** Transformational leadership is positively related to work engagement after controlling for role clarity and autonomy.

Similarly, we expect that resources inherent in fair leadership that facilitate work engagement are not redundant to other resourceful aspects of work. Considering unfair leadership, it is conceived to be a very specific hindrance demand that decreases work engagement (Crawford et al., 2010) and contributes to employee ill-being independently of work characteristics.

**Hypothesis 4.** Fair leadership is positively related to work engagement after controlling for role clarity and autonomy.

**Hypothesis 5.** Fair leadership is negatively related to exhaustion after controlling for workload, role clarity, and autonomy.

## Methods

### *Participants and procedure*

This study is part of a larger research project entitled Rewarding and Sustainable Health-Promoting Leadership (Re-Su-Lead) that aims to shed new light on the link between leadership and employee well-being. The participants in the present cross-sectional study were public sector workers employed by four municipalities in Finland ( $N=333$ ). The data utilized in this study were collected in the late spring of 2012 at the second wave of longitudinal data collection in the larger project (see Perko, Kinnunen and Feldt, 2014; Perko, Kinnunen, Tolvanen and Feldt, 2016). Of the 333 participants in the second wave (T2), 262 had also participated in the first wave (T1) in the spring of 2011. Thus, 71 new participants entered the study at T2. The T2 sample was selected for the present study as the T1 sample did not include all the measures needed for the study purposes.

The data were collected through online or paper questionnaires that were accompanied by a cover letter stating that participation was voluntary and confidential. Thus, the respondents provided informed consent by participating in the study. The recipients were asked to assess work characteristics, a variety of leadership behaviours of their nearest superiors and their own well-being. Altogether, 922 questionnaires were sent to eligible employees and 333 properly completed questionnaires were returned, yielding an overall response rate of 33.1% (also non-respondents from T1 were re-invited to participate). The response rate was considerably higher (47.2%) among those who had participated in the study already at T1 (T1 response rate 62.5%). According to Baruch and Holtom (2008), the average response rate in organizational studies using individuals as the unit of analysis was 52.7 with a standard deviation of 20.4. Thus, the response rates of the current study are not uncommon. Attrition analyses reported previously (Perko et al., 2016) showed that those who continued participation at T2 did not markedly differ from those participants who dropped out from the study after T1. Compared to the eligible population in the organizational units at T2, women were overrepresented (76.8% vs. 87.1%) among the respondents in the sample used ( $\chi^2(1) = 19.53, p < .001$ ).

The participants worked in a variety of occupations, most often in child care (25.2%), teaching (18.9%), cleaning (16.5%), property maintenance (9.3%), catering (8.7%), nursing (7.5%) or other (13.9%). The mean age was 48.5 years ( $SD = 9.75$ ). With regard to level of attained education, half of the participants (50.8%) had upper secondary education (e.g. vocational school) or less, and the rest had either a bachelor's degree (22.8%) or equivalent, or at least a master's degree (21.1%). Average tenure under the current supervisor was 5.49 years ( $SD = 6.49$ ), ranging from 1 to 38 years (median = 3.0). Altogether, 65 identified leaders were rated by the employees and the average number of employees rating the same leader was 5.08. The majority of the leaders were in a supervisory position with only staff in a non-leading position reporting to them.



## Measures

### Leadership

*Transformational leadership* was assessed with the 7-item, one-dimensional Global Transformational Leadership Scale (e.g. “My immediate superior communicates a clear and positive vision of the future”) that was developed and validated by Carless et al. (2000). The responses were given on a scale from 1 (*to a very small extent*) to 5 (*to a very large extent*).

*Fair leadership* was assessed with five items that capture essential aspects of fairness in daily supervisory work (e.g., Elovainio et al., 2006; Kivimäki et al., 2005). Two of the items (“Does your immediate superior treat the workers fairly and equally?” and “Does your immediate superior distribute the work fairly and impartially?”) were derived from the QPS Nordic questionnaire (Dallner et al., 2000). These items were rated on a scale from 1 (*very seldom or never*) to 5 (*very often or always*). In addition, three statements from the four-item fairness subscale of the health-promoting leadership scale (Vincent, 2012) were used, two of which explicitly inquired unfair behaviours: “My immediate superior criticizes in an unfair way”, “. . . favours certain workers” and “. . . judges my performance justly and fairly”. The fourth item of the subscale concerned fair distribution of work, similar to the one we took from the QPS Nordic. The rating scale ranged from 1 (*strongly disagree*) to 5 (*strongly disagree*).

### Work characteristics

*Workload* was measured with the 5-item Quantitative Workload Inventory (Spector and Jex, 1998) that assesses the amount of work in terms of pace and volume (e.g. “How often does your job require you to work very fast?”). The items were scored from 1 (*very seldom or never*) to 5 (*very often or always*). *Autonomy* was assessed with four items on decision latitude (e.g. “I can plan my own work”) with respect to planning work, ways of doing work and choosing job assignments (Guest, Isaksson and De Witte, 2010). The rating scale ranged from 1 (*very seldom or never*) to 5 (*very often or always*). *Role clarity* was measured with the 3-item scale (e.g. “Does your work have clear objectives?”) from the Copenhagen Psychosocial Questionnaire (COPSOQ II, Pejtersen et al., 2010). The items were rated from 1 (*to a very small extent*) to 5 (*to a very large extent*).

### Employee well-being

*Work engagement* was assessed with six items from the abridged Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker and Salanova, 2006), validated in Finland by Seppälä et al. (2009). Three of the items measured vigour (e.g. “At my work, I feel that I am bursting with energy”) and three measured dedication (e.g. “I am proud of the work that I do”). The items were rated on a scale from 0 (*never*) to 6 (*every day*). *Exhaustion* was measured by three items (e.g. “I feel burned out from my work”) from the Finnish version of the Maslach Burnout Inventory (Kalimo, Hakanen and Toppinen-Tanner, 2006; Maslach, Jackson and Leiter, 1996). The rating scale ranged from 0 (*never*) to 6 (*every day*).

## Statistical analyses

The analyses were performed utilizing structural equation modelling (SEM) with latent variables. We used Mplus software version 7.3 (Muthén and Muthén, 1998–2012) with MLR (maximum likelihood estimation with robust standard errors). Overall, consistent with the hypotheses, the constructed regression models aimed to indicate whether a certain leadership variable predicted employee well-being when the contribution of other variable(s) was taken into account. In order to differentiate the unique contribution of highly correlating latent factors, particularly those concerning transformational and fair leadership, we employed the Cholesky decomposition (see, de Jong, 1999, for details). In SEM context using latent variables, it is possible to overcome the problem of multicollinearity through the Cholesky approach and conduct an analysis similar to fixed-order regression analysis, i.e. enter the predictors in a pre-specified order (de Jong, 1999). For example, when investigating the unique role of fair leadership while controlling for transformational leadership, well-being was regressed on the two Cholesky factors that partitioned the variance of the latent leadership variables. The Cholesky factor, which was introduced last into the regression model, indicated the remaining unique contribution of fair leadership. To separate the unique contribution of transformational leadership, the leadership variables were entered into the regression model in an opposite order. The models involving work characteristics were constructed in a similar way. The approach of initially analysing only leadership variables (without other job demands and job resources) allowed us to ascertain the largest possible effect of the leadership dimension on well-being.

Due to the clustered data (employees were nested in work units rating a shared leader), the analysis option in Mplus for a complex sample was used. While modelling variables on a single level, this analytical approach corrects standard errors and the chi-square test of model fit that are affected by non-independence of observations (Muthén and Muthén, 1998–2012). Consequently, it yields more reliable *p*-values for statistical significance. We used one-tailed tests for *p*-values in the regression analyses.

Multiple criteria were used to assess model fit: the  $\chi^2$ -test of model fit, RMSEA (root mean square error of approximation), standardized root mean square residual (SRMR), comparative fit index (CFI) and Tucker Lewis index (TLI). Generally, a non-significant  $\chi^2$ -test result indicates good model fit. However, the  $\chi^2$ -test has some limitations, such as the influence of sample size, which often make significant *p*-values less informative (e.g. West, Taylor and Wu, 2012). However, the ratio of  $\chi^2$ /df should be as small as possible and as a rule of thumb, it is  $< 2$  for the model to be considered good. Although universal cut-off values are debatable, the following guidelines were used as indicative of good model fit: values of RMSEA  $< .06$ , SRMR  $< .08$ , CFI and TLI  $> .95$  (Hu and Bentler, 1999).

## Results

### Preliminary analyses

**Measurement model.** We started the analysis with a measurement model comprising all seven study variables (leadership, work characteristics and well-being). The observed variables (scale items) were set to load only on their respective factors and the factors were allowed to correlate (Anderson and Gerbing, 1988). Considering the criteria for model fit provided above, the overall measurement model provided acceptable fit with the data [ $\chi^2 = 927.28$  (472),  $p < .001$ , RMSEA = .054, CFI = .922, TLI = .913, SRMR = .059]. In this model, two pairs of error covariances were released to attain acceptable model fit, these being between two work engagement (dedication) items (“My job inspires me” and “I am enthusiastic about my job”) and two workload items (“How often does your job require you to work very hard?” and “How often do you have to do more work than you can do well?”). A discrepancy between the measurement model and the data was observed for which the modification indices indicated remedy by allowing the fair leadership item, “My immediate superior judges my performance justly and fairly” to load on the transformational leadership factor. However, allowing the cross-loading conflicted with our study aims and the item loaded reasonably strongly on the fair leadership factor (standardized loading of .76  $p < .001$ ). Therefore, the item was kept loading only on the fair leadership factor. In order to adequately fulfil the purpose of the study in spite of the variance of transformational leadership related to this item, this problem was taken into account in the subsequent regression analyses.

Standardized loadings of the leadership factors, well-being factors and factors of work characteristics ranged from .69 to .91, from .63 to .90 and from .63 to .82, respectively ( $p < .001$  for all). An exception was the transformational leadership item “My immediate superior is clear about his/her values and practices what he/she preaches”, which showed a lower loading of .36 ( $p < .001$ ). However, we decided not to modify the previously validated measure of transformational leadership (Carless et al., 2000). Correlations of latent factors, mean values of corresponding sum scores and Cronbach alphas are presented in **Table 1**.

	M	SD	1	2	3	4	5	6	7
1 Transform. leadership	3.36	0.78	.90						
2 Fair leadership	3.77	0.90	.81***	.88					
3 Work engagement	4.87	1.00	.30***	.27**	.92				
4 Exhaustion	2.11	1.33	-.29***	-.32***	-.35***	.82			
5 Workload	3.63	0.62	-.09	-.07	.00	.42***	.83		
6 Autonomy	3.72	0.77	.19**	.10	.36***	-.12	.07	.81	
7 Role clarity	4.11	0.63	.37***	.29***	.48***	-.10	.19	.47***	.78

**Table 1:** Mean values and standard deviations of study variables (sum scores) and correlations of latent factors. Cronbach's alphas are presented on the diagonal.

\*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Discriminant validity.** Next, we tested whether the highly correlating constructs of transformational and fair leadership ( $r = .81$ ,  $p < .001$  for latent variables) could be considered as separate from each other. The chi-square difference between the one-factor model (the observed variables of the two leadership constructs were set to load on the same factor) and the two-factor model (they were set to load on two separate factors which were allowed to correlate) was tested with the scaled chi-square difference test. The two-factor model was significantly better in fit than the one-factor model thereby supporting for the distinct nature of the constructs [ $\Delta \chi^2(1) = 33.87$ ,  $p < .001$ ].

**Assessing the implications of shared leaders.** As the employees were clustered around the leaders, we examined the extent that the focal constructs of leadership and well-being should be conceived as referring to group-level phenomena. Concerning leadership, this pertains to the question on agreement, that is, to what extent the perceptions of leadership are shared within groups of employees that rate the same target leader. For this purpose, we calculated intraclass correlations (ICC) for the latent variables. The ICCs were .32,  $p < .001$ , for transformational leadership and .21,  $p < .001$ , for fair leadership, indicating that group membership explains 32% and 21% of the variance in transformational and fair leadership, respectively. These values reveal that a shared leader indeed unifies the ratings to a considerable extent. Regarding well-being, the ICCs for work engagement and exhaustion were .12,  $p = .092$  and .06,  $p = .125$ , respectively. Concerning both well-being constructs, estimates for group-level variance were also found to be non-significant. On this basis, we concluded that well-being was mainly an individual level phenomenon, while group-level perspective was more relevant with regard to leadership. To sum up, the intraclass correlations demonstrated non-independence in the data and, thereby, the need for the corrections (complex sample approach in Mplus).

### Comparing the effects of transformational and fair leadership

The results of the four Cholesky regression models that tested the study hypotheses with latent variables are presented in **Table 2**. **Table 2** also shows the goodness-of-fit statistics for all the models. In general, the models

Independent variables	Work engagement			Exhaustion			$\chi^2$ (df)	p	RMSEA	CFI	TLI	SRMR
	$\beta$	p	$\Delta R^2$	$\beta$	p	$\Delta R^2$						
<i>Model 1</i>												
1 Fair leadership	.25	<.001	.06	-.31	<.001	.10	356.23 (179)	<.001	.055	.954	.946	.050
2 Item: Fair performance evaluation	.16	.006	.03	-.07	.206	.00						
3 Transformational leadership	.12	.064	.01	-.04	.288	.00						
<i>Model 2</i>												
1 Transformational leadership	.31	<.001	.09	-.29	<.001	.09	338.72 (179)	<.001	.052	.958	.951	.052
2 Fair leadership	.03	.363	.00	-.15	.038	.02						
<i>Model 3</i>												
1 Role clarity	.48	<.001	.23	-.10	.110	.01	633.99 (334)	<.001	.052	.934	.925	.060
2 Autonomy	.16	.019	.02	-.09	.165	.01						
3 Workload	–	–	–	.42	<.001	.17						
4 Transformational leadership	.12	.038	.02	-.19	<.001	.04						
<i>Model 4</i>												
1 Role clarity	.48	<.001	.23	-.10	.099	.01	574.07 (283)	<.001	.056	.930	.919	.063
2 Autonomy	.16	.021	.02	-.09	.173	.01						
3 Workload	–	–	–	.42	<.001	.18						
4 Fair leadership	.13	.019	.02	-.25	<.001	.06						

**Table 2:** Standardized regression coefficients and model fit statistics from a Cholesky regression analysis using latent variables: work engagement and exhaustion explained by leadership and work characteristics.

*Note.* The numbers preceding the independent variables indicate the order in which the independent variables were entered into the regression analysis. One-tailed tests were used for p-values.

provided a good fit with the data, although the models without work characteristics were somewhat better in fit than the models including work characteristics. For all the models, the ratio of  $\chi^2/df$  remained < 2 and RMSEA < .06.

The *first* regression model investigated the unique contribution of transformational leadership on work engagement and exhaustion while controlling for fair leadership. In order to appropriately address the hypothesis with the presence of the problematic fair leadership item on performance evaluation that was mentioned in connection with the measurement model, we formed an additional Cholesky component just for this item. This approach allowed us to analyse the unique variance of transformational leadership that is independent of the fair leadership factor and also of the information contained in that specific fair leadership item. Conceptually, this means that we considered fair performance evaluation to reflect only fair leadership. As seen in **Table 2**, fair leadership alone significantly predicted both work engagement ( $\beta = .25, p < .001$ ) and exhaustion ( $\beta = .31, p < .001$ ). Regarding the unique effects, transformational leadership did not account for additional variance either in work engagement or exhaustion when fair leadership was controlled for. Thus, Hypothesis 1 was not supported.

The *second* model addressed the unique contribution of fair leadership while controlling for transformational leadership. In order to control for all variance related to transformational leadership, consistent with the study aims, the cross-loading problem of the fair performance evaluation item was resolved by setting all the fair leadership items to load directly on the first Cholesky component. The results from the regression analysis showed that transformational leadership alone predicted both work engagement ( $\beta = .31, p < .001$ ) and exhaustion ( $\beta = -.29, p < .001$ ). In addition, fair leadership accounted for unique variance in exhaustion while transformational leadership was controlled for ( $\beta = -.15, p = .038$ ) and contributed to an increase of 2% in the explanation rate. Hence, Hypothesis 2 gained support. It can be seen from **Table 2** that without other predictors, leadership explained 9–10% of the variance in well-being.

***The role of transformational and fair leadership in the presence of work characteristics***

The subsequent regression models investigated whether transformational leadership (*third* model) and fair leadership (*fourth* model) related significantly to work engagement and exhaustion beyond the effect of role clarity,

autonomy and (only for exhaustion) workload (Table 2). Accordingly, four Cholesky components were specified and the one that was entered last into the analysis comprised the unique variance of the leadership variable in question.

The results showed, first, that transformational leadership retained a unique relationship to work engagement over and above the effect of role clarity and autonomy ( $\beta = .12, p = .038$ ), supporting Hypothesis 3. An additional 2% of variance in work engagement was explained by transformational leadership. Second, concerning fair leadership independent from work characteristics, the results revealed a significant relationship between fair leadership and work engagement ( $\beta = .13, p = .019$ ), yielding a 2% increase in the explanation rate. Thus, Hypothesis 4 was supported. Third, fair leadership accounted for additional variance in exhaustion ( $\beta = -.25, p < .001$ ), consistent with Hypothesis 5. Fair leadership contributed to a 6% improvement in the explained variance of exhaustion after workload. Unexpectedly, role clarity and autonomy were not significantly related to exhaustion. In general, however, the role of work characteristics was considerably more prominent than that of leadership, as, for example, role clarity explained 23% of the variance in work engagement and workload explained 17–18% of the variance in exhaustion. Despite this, the results suggest that the impact of leadership on well-being is not redundant to other job resources and demands. Taken together, the unique (i.e. independent from the analysed work characteristics) contribution of leadership appears to be 2–6% of the variance in well-being.

## Discussion

During the past ten to fifteen years, occupational health psychology has shown a growing interest in transformational leadership (Arnold and Connelly, 2013; Skakon et al., 2010), potentially the most influential theory in leadership research to date (Judge and Piccolo, 2004). While in leadership research the added value of transformational leadership has been contrasted with that of other leadership concepts (Judge and Piccolo, 2004), in occupational health psychology this task has remained unexplored. Consequently, the overarching aim of the current study was to investigate the *unique* relevance of transformational and fair leadership for employee well-being. The results revealed, first, that contrary to our expectations, transformational leadership did not show incremental validity over fair leadership in relation to work engagement (vigour and dedication). In other words, our results demonstrated that fair leadership enhanced work engagement to the same degree as did transformational leadership. Second, consistent with the hypothesis, (un)fair leadership accounted for incremental variance in exhaustion, beyond the effect of transformational leadership. Third, both transformational and fair leadership showed relationships with well-being that were independent of work characteristics, thereby supporting the hypotheses. The results are discussed in more detail in the following.

## Theoretical implications

Taken together, the results of this study suggest that transformational leadership is redundant to fair leadership when employee well-being is the criterion. Concerning positive well-being, fair leadership explained work engagement equally well, thereby leaving no additional variance for transformational leadership to explain. Thus, our results concur with the findings of Hansen et al. (2014) and show that fair leadership also facilitates energy and dedication at work. From the point of view of subordinates, being able to trust that the organizational authorities treat employees respectfully and in an unbiased way is essential in order to feel engaged at work (e.g. Kivimäki et al., 2005). Justice behaviours can be seen to foster trust (Colquitt et al., 2013) and potentially also a healthy feeling of self-worth among employees (Ford and Huang, 2014).

However, fair leadership appears more important than transformational leadership in terms of leadership behaviours that help to impede employee well-being from deteriorating. The finding that fair leadership demonstrated incremental validity in relation to exhaustion corroborates the notion of an important difference between low levels of transformational and low levels of fair leadership. Lack of fairness implies unfairness, which can be conceived to drain employees' energy reserves and contribute to health impairment in a way that is characteristic for hindrance demands: strain results, with no gains in sight (Crawford et al., 2010). Coping with unfair leadership requires additional effort and consumes energy, but no amount of effort will result in a rewarding situation, which is characteristic of hindrance demands. This is likely to evoke negative affect, frustration, decreased internal motivation, and potentially withdrawal behaviour on the part of the employee (Crawford et al., 2010), all consequences that conceivably contribute to exhaustion.

In regard to the JD-R model, the result on the unique contribution of (un)fair leadership to employee exhaustion supports the dominant role of job demands, in comparison to the lack of resources, in the health-impairment process as outlined in the JD-R model (Bakker and Demerouti, 2007; Demerouti et al., 2001; Schaufeli and Bakker, 2004). On a more general level, this is consistent with the COR theory's statement that resource loss is the primary factor in stress reactions (Hobfoll, 2001). Hindrance demands, in particular, are compatible with the notion of resource loss, because hindrance demands, by definition, require sustained effort and drain energy without engendering experiences of resource gain, as challenge demands do.

Concerning the unique role of leadership when controlling for work characteristics, both transformational and fair leadership were found to fuel work engagement, independent of the job resources of autonomy and role clarity. The relationships were of similar strength for both leadership behaviours, yielding a conclusion that leadership explains about 2% incremental variance in work engagement. Moreover, (un)fair leadership retained a significant relationship with exhaustion when work characteristics were controlled for, consistent with our hypothesis (we did not present a hypothesis on an independent relationship



between transformational leadership and exhaustion). In support of the complementary unique role of (un)fair leadership in exhaustion, (un)fair leadership explained an additional 6% of variance in exhaustion after the share of workload (18%) had been partialled out. Thus, the unique explanatory role of leadership was found to be 2–6% of the variance in well-being, being highest in the relationship between (un)fair leadership and exhaustion.

Given that transformational and fair leadership explained work engagement equally well, our results seem to lend support to a more general role of supervisors that is independent from other job resources. The independent role of leadership was expected as there are many facets in supervisory leadership that are certainly not redundant to work characteristics but relate to the social exchange in the relationship between a leader and a follower, such as trust and support in many forms (e.g., Colquitt et al., 2013). While the practical relevance of the 2% explanation rate may appear negligible, we do not posit that the whole significance of leadership would be redundant to this explanation rate. Part of the influence leaders exert on employee well-being is likely to reside in work characteristics such as role clarity, as supervisors are in key positions to clarify the main tasks and related expectations to their employees. Accordingly, psychologically modifiable work characteristics that may be seen as job resources have been investigated as mediators between transformational leadership and employee motivation (Piccolo and Colquitt, 2006) and well-being (e.g., Nielsen et al., 2008).

A large overlap between the constructs of transformational and fair leadership was expected and ascertained in this study. Although the theoretical distinction between transformational and fair leadership is obvious, and the confirmatory factor analysis indicated a conceptual difference, their empirical overlap ( $r = .81$ ) was so high that it can be seen to threaten the practical meaning of the constructs. This relative discrepancy between theoretical and empirical distinctiveness inevitably draws attention to the measurement of the constructs. One possible explanation for the empirical overlap relates to affective issues in leadership ratings (Rowold and Borgman, 2014). In particular, the transformational leadership items are rather affective, clearly desirable, and to some extent abstract in content. Instead of engaging in detailed analysis of the behavioural characteristics of the leader, affect experienced towards the leader may be used as a heuristic base for the evaluation (Rowold and Borgman, 2014; Schwarz, 1990). Consistent with that, interpersonal affect (liking) has indeed been shown to play a considerable role in ratings of transformational leadership (Brown and Keeping, 2005). If interpersonal affect is the key to employee ratings of leadership, as the results of a recent study indicate (Rowold and Bergman, 2014), specific leadership styles in relation to employee well-being become empirically less salient, consistent with the findings of the current study.

Whereas one might argue that ratings of fair leadership are also susceptible to the influence of interpersonal affect, the fairness paradigm has, however, important strengths. First, it presents a fewer amount of theoretical propositions than the transformational leadership framework

in explaining the impact on employee health and well-being, that is, it is more parsimonious. Second, the effects of fairness on employee health have been supported by findings from stronger study designs than the effects of transformational leadership. The evidence for fairness effects derives from longitudinal epidemiological studies measuring objective health outcomes (e.g. Elovainio et al., 2006; Kivimäki et al., 2003, Kivimäki et al., 2005), intervention studies (Greenberg, 1993; Skarlicki and Latham, 1997) and there are also studies demonstrating group-level effects on well-being (Moliner et al., 2005; Way et al., 2014). In contrast, the impact of transformational leadership on employee well-being has thus far been supported in cross-sectional questionnaire studies conducted at the individual level of analysis.

The literature to date suggests that transformational leadership should be conceived as an especially influential tool to promote employee well-being. The results of the present study cast some doubt on the specific effects transformational leadership is supposed to exert on employee well-being. In this study, no additive effects on well-being were found when transformational leadership was compared with fair leadership. Consequently, research on leadership and employee well-being would benefit from rethinking the position of transformational leadership in the context of other resourceful, potentially more primary aspects of leadership, such as fairness.

It is worth noting that in leadership-employee well-being studies, immediate supervisors who are typically low in the organizational hierarchy are rated. Transformational leadership theory was developed largely based on top-level executives, yet uncritically adopted in research on immediate, nearby-leaders (Alimo-Metcalfe, 2013; Bryman, 1992). Obviously, the supervisors next to employees, particularly if they are supervisors in the lower levels of organizational hierarchy, are not in a position to create visions for the future of the organization and exert influence through strategic work (e.g., Bryman, 1992). Fair behaviours, instead, can be plausibly conducted in any level of the organization and the values displayed by fair leadership become evident in the questionnaire items inquired from employees. As the present study focused on employee well-being as the sole criterion for the impact of leadership, it is beyond the aims of this study to evaluate the overall validity of the transformational leadership construct, which has also received harsh critique (van Knippenberg and Sitkin, 2013; Yukl, 1999).

Our findings contribute to the research on leadership and employee well-being in several respects. First, in our investigation on the role of immediate supervisors in employee well-being, we integrated organizational justice literature and research on transformational leadership, both of which have addressed employee well-being issues. Second, we determined that about 20–30% of the variation in the leadership variables is explained by the fact that employees within the work units rate the same leader. Thus, who is being rated matters to leadership perceptions. Accordingly, we took statistically into account the clustering effects in our sample. It is important to note that if employees rate the same leader and the resulting

non-independence of observations is ignored, the results are likely to overestimate the leadership effects due to underestimation of standard errors (e.g. Julian, 2001).

### ***Study limitations and recommendations for future studies***

Aside from its strengths, this study also has limitations that should be noted when assessing the results. First, we used shortened scales. Exhaustion was only included as the core dimension of burnout in the study and the one-dimensional Global Transformational Leadership measure was used instead of the longer Multifactor Leadership Questionnaire. It is in principle possible that a multidimensional measure of transformational leadership would show stronger relationships with work engagement than the one-dimensional measure used in this study. However, concerning ill-being, the correlations between transformational leadership and exhaustion seem to be similar across the facets of transformational leadership (Stordeur et al., 2001). Moreover, it should be noted that three of the five fair leadership items used in this study were positively formulated, so we measured fair leadership more than unfair leadership. It would be useful for future studies to develop measures on unfair leadership and ascertain the implications and differences in inquiring fair or unfair leadership.

Second, a limited number of work characteristics were examined in this study and, as a result, the omitted variable problem can be considered only partially solved. Third, generalizability of our results is restricted by sample characteristics, particularly by the fact that the sample consisted mainly of women. In addition, due to different occupations and working contexts, large variation in the tenure with the leader was observed in our sample. Similarly, considerable variation is likely in regards to the frequency of interaction and other formal characteristics of the relationship between the supervisors and subordinates. Our results need to be replicated in samples involving more men and more homogenous contact modalities between leaders and employees.

Finally, we acknowledge the limitations of a cross-sectional self-report study with respect to causality: The relationships may be inflated because of the same source bias (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). However, obtaining measures of leadership and employee well-being from different sources is not feasible when the study objective relates to subjective experiences: it is ultimately the subjective experience an employee has of the leadership behaviours that matters for well-being. Moreover, three points that partially mitigate this limitation can be discerned. First, several of the recommendations for this type of study by Podsakoff et al. (2003) were applied: different scale endpoints and verbal anchors were used for predictor and criterion measures; the items were carefully constructed as they were either parts of well-established measures or had been repeatedly used in previous studies; the participants were assured that there are no right or wrong answers and that their answers are confidential. Second, we were able to demonstrate the implications of shared leaders for employee ratings on leadership and well-being. Paradoxically, as there was no

group-level variance in well-being while there was in leadership ratings, it can be concluded that leadership ratings are not directly a function of well-being.

Third, and most importantly, the current data is compatible with the purpose of this study, that is, to disentangle the unique variance explained by each leadership construct. With this specific objective, a longitudinal study would have provided little additional value. This is particularly so because currently there is no appropriate knowledge concerning the time frame in which the effect of leadership on employee well-being should occur. However, this knowledge would be crucial for correct inferences from a longitudinal study (Kelloway and Francis, 2013; Mitchell and James, 2001; Podsakoff et al., 2003). Worth noting is that the time frame should be measured from the point in time when the employee begins to work with a certain leader, which therefore should coincide with the start of a study period. In this state of affairs, with this particular study objective, we contend that it is justifiable to examine cross-sectional data and thereby the maximum proportion of variance explained by leadership.

Concerning future studies, further comparisons between various aspects of leadership and their unique relationships with employee health and well-being would be beneficial. In this regard, future studies may further elucidate the role of interpersonal affect, affective consequences of injustice, and other affective experiences in relationships between leaders and employees (Colquitt et al., 2013; Ford and Huang, 2014; Rowold and Borgmann, 2014). For this purpose, experience sampling methodology would be one useful but thus far underutilized alternative (Sonnentag, Binnewies and Ohly, 2013). Researches may focus on interactions and affective events between leaders and followers to better understand the sequences of reactions, and to illuminate how the supervisor–subordinate relationships evolve (see Meier and Gross, 2015, for an interaction record study).

### ***Conclusions and practical implications***

The results of this study demonstrated that the effects of transformational leadership are redundant to fair leadership in relation to employee well-being. On this basis, the added value of transformational leadership to employee well-being can be questioned. (Un)fair leadership, however, showed an independent relationship with exhaustion, beyond the effect of low level transformational leadership. Both fair and transformational leadership showed independent relationships with work engagement and exhaustion beyond work characteristics, thereby supporting the specific role of supervisors in employee well-being. Based on these results, we encourage leaders to pay attention to fair, equal, and respectful treatment of employees, especially with regard to performance evaluation and distribution of work tasks. Leaders do not need to be concerned if they experience difficulty in adopting transformational leadership behaviours as long as they are fair. In addition, to facilitate work engagement, it is crucial for employees to be aware of the expectations and areas of responsibility regarding their work. Exhaustion among employees, in turn, is best prevented by restricting workload and being fair towards employees.

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## Competing Interests

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## **Long-term profiles of work-related rumination associated with leadership, job demands, and exhaustion: A three-wave study**

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## Abstract

This study extends on previous research regarding recovery from work stress by investigating the role of qualitative job demands and leadership in employees' work-related rumination (WRR). The long-term development of WRR was examined from a person-centred approach across 22 months. Drawing on the stressor-detachment framework and the conservation of resources theory, we investigated whether different WRR profiles could be understood in terms of levels of and changes in job demands (quantitative, cognitive, emotional), several aspects of supervisory leadership, and exhaustion that was expected to result from the impeded energy restoration process. A three-wave questionnaire study was conducted among Finnish municipal employees in heterogeneous occupations. Factor mixture modelling was used to identify latent classes (i.e. subgroups of participants with similar mean levels and mean level changes) of WRR. The results indicated five distinct classes of work-related rumination. Participants in the higher WRR classes reported higher levels of job demands, less supervisor fairness, and more abusive supervision. In the decreasing class, WRR decreased concurrently with decreasing job demands. Exhaustion showed considerable congruence with WRR both between and within persons. The findings are discussed from the point of view of a loss cycle concerning energetic psychological resources and difficulties in goal attainment.

Keywords: work-related rumination, leadership, job demands, exhaustion, recovery from work stress



# Long-term profiles of work-related rumination associated with leadership, job demands, and exhaustion: A three-wave study

## INTRODUCTION

Recovery from work is not always successful. One reason for this is that stressors of today's working life may not be easily left behind. After job-related activities have ended, mental processing related to work stressors can continue, prolonging psycho-physiological stress reactions and hindering recovery from work (Cropley & Zijlstra, 2011; Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2015). This study provides a long-term, person-centred perspective on perseverative, recurrent thoughts about job-related problems during off-job time, that is, work-related rumination. By applying a person-centred approach, we aimed to yield results that are more easily interpretable at the single-individual level, compared to results from a variable-centred approach that focuses on relationships between variables (Bergman & Lundh, 2015; Bergman, Magnusson, & El-Khoury, 2003; Laursen & Hoff, 2006). In addition to identifying participants with similar developmental profiles of work-related rumination across a time span of two years, we investigated the extent to which the profiles can be understood in terms of job demands, leadership, and exhaustion.

The contribution of this study is three-fold. First, we extend the time frame of previous studies on work-related rumination from a few weeks to nearly two years. Second, we focus attention on the role of leadership in employee recovery and, in particular, work-related rumination. Although leaders are supposed to be in a crucial position to affect employees' psychological detachment from work (Sonnentag & Fritz, 2015), little empirical knowledge on the topic exists. Third, utilising a person-centred approach, we show how work-related rumination varies between and within individuals across time, and what is characteristic of individuals, for example, whose work-related rumination is chronically high, in terms of quantitative, cognitive, and emotional job demands, leadership, and development of exhaustion.

Instead of prediction, a strength of the person-centred approach is the identification and description of different types of individuals and their developmental profiles across time (Bergman & Trost, 2006; Laursen & Hoff, 2006). The person-centred approach can be described as holistic because of its emphasis that an array of related factors contribute to the same direction on the level of the individual (Bergman & Trost, 2006). By examining absolute changes (mean values as opposed to the relative order of individuals) within naturally occurring subgroups of participants, we also respond to the call for more descriptive studies on change in the variables of interest (Kelloway & Francis, 2013), and in particular, to the need to examine across-time development in mean levels related to resource gain and loss processes (Taris & Kompier, 2014).

### ***Work-related rumination as a reaction to problems in goal attainment***

Rumination refers to "a class of conscious and recurrent thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts" (Martin & Tesser, 1996, p. 7). Importantly, these thoughts are described as unintended and difficult to eliminate (Martin & Tesser, 1996). In the current study, ruminative thoughts centre on work-related problems, and we examine these thoughts during off-job time when the individual is, in principle, free from work demands.

Ruminative thoughts emerge when there is a subjectively experienced discrepancy in goal progress, that is, when there are problems in progress towards the goal, but the goal is still maintained and not abandoned (Martin & Tesser, 1996; see also Cropley & Zijlstra, 2011). Goals can be broadly defined as internal representations of desired states of affairs (Austin & Vancouver, 1996). At work, people have multiple important goals, most pertaining to accomplishment of work tasks or retaining social resources like social support from the supervisor (Halbesleben, 2006). However, not every little unattained goal will be ruminated upon. People ruminate primarily about

goals that are perceived to be central to one's well-being, that is, higher order-goals, and only when there are hindrances in the way towards the desired state (Martin & Tesser, 1996). Rumination understood in this way "is an attempt at problem solving – even when it isn't solving the problem" (Carver, 1996, p. 50).

### ***Work-related rumination prolongs stress-related activation***

The perseverative cognition hypothesis states that psychosocial stressors contribute to ill health through perseverative cognitions (worry, ruminative thoughts, anticipatory stress) that prolong stress-related physiological activation (Brosschot, Gerin, & Thayer, 2006; Ottaviani et al., 2016, for reviews). Thus, at the core of work-related rumination, cognitive representations of work-related stressors prolong affective and physiological activation related to these stressors (Brosschot et al., 2006; Cropley, Rydstedt, Devereux, & Middleton, 2015; Geurts & Sonnentag, 2006). This prolonged psycho-physiological activation is also why the stressor-detachment model states that psychological detachment from work is a core recovery experience (Sonnentag & Fritz, 2015).

In the literature on recovery from work stress, the concept of psychological detachment holds a central place (Sonnentag & Fritz, 2015). Psychological detachment is described in terms of the absence of both job-related activities and any kind of job-related thoughts (Sonnentag & Fritz, 2015). While the presence of job-related thoughts, and thereby lack of psychological detachment, may take many forms, work-related rumination refers to predominantly stressful or negative thoughts. This is because by definition, these thoughts are repetitive, unintentional, and difficult to control, that is, intrusive (Cropley et al., 2015).

In fact, accumulating evidence reveals that positive work-related thoughts during off-job time, which also indicate a lack of psychological detachment, show beneficial effects (Flaxman, Ménard, Bond, & Kinman, 2012; Fritz & Sonnentag, 2005; Meier, Cho, & Dumani, 2016). For example, a series of three diary studies demonstrated that positive work reflections predicted better affective well-being (Meier et al., 2016). Hence, it seems that the detrimental effects of low detachment are explained by job-related thoughts with particularly negative affective valence. Therefore, the stressor-detachment model seems to gain its relevance when the focus is on constructs like work-related rumination, the crux of poor detachment (Sonnentag & Fritz, 2015, p. S85). Accordingly, we contend that rumination is a particularly detrimental manifestation of poor psychological detachment because of the tone and perseverative nature of the thoughts and the prolonged activation related to them (Brosschot et al., 2006; Flaxman et al., 2012; Geurts & Sonnentag, 2006).

The costs and consequences of inadequate recovery following effort investment in job demands has been elaborated in the effort-recovery (E-R) model that combines aspects of physical and mental load (Meijman & Mulder, 1998). According to this model, effort expenditure at work causes short-term psychophysiological load reactions, which are reversible in principle. When the load exposure ceases, recovery occurs, that is, the psycho-biological system stabilizes to pre-stressor levels. However, this process is hindered if work stressors are relived through work-related rumination. Due to the impeded recovery process, individuals need to raise their effort levels to meet the demands of the work (Meijman & Mulder, 1998). This compensatory effort contributes to the accumulation of load reactions. Because of continued exposure to job demands and quantitatively and qualitatively insufficient recovery, short-term irreversible load reactions become more persistent and harmful (Meijman & Mulder, 1998), and constitute risk factors for impaired health and organic diseases (Brosschot et al., 2006; Ottaviani et al., 2016). Regarding work-related rumination, there is some empirical support for prolonged psycho-physiological activation, as indicated by deviant patterns of cortisol secretion among high ruminators (Cropley et al., 2015).

### ***High job demands aggravate work-related rumination***

It has long been known that recovery from work is hindered by prolonged and intensive exposure to job demands (Geurts & Sonnentag, 2006; Meijman & Mulder, 1998). Considering literature on psychological detachment, a wide range of studies with various designs (e.g. within-person, other-

reports) have shown that difficulties in switching off from work are associated with demands at work (for reviews, see Sonnentag & Fritz, 2015; Wendsche & Lohmann-Heischl, 2017).

Relevant to the current study, ruminative thoughts are posited to arise especially in situations when there is a mismatch between an individual's resources and environmental demands, that is, when a person experiences stress (Martin & Tesser, 1996). In the occupational domain, this view is supported by a longitudinal between-person study on work stress (Van Laethem et al., 2015) and a within-person study on distressing works shifts (Radstaak et al., 2014) as predictors of work-related perseverative cognitions (similar concept to broadly defined work-related rumination). In addition, time pressure has been shown to relate to increased work-related rumination both between and within persons (Berset, Elfering, Lüthy, Lüthi, & Semmer, 2011; Syrek & Antoni, 2014; Syrek, Weigelt, Peifer, & Antoni, 2017). Similarly, high job strain (high demands accompanied by low control and low skill utilisation) was related to rumination about work (Cropley & Purvis, 2003). Thus, there is reason to assume that unfavourable work conditions and, particularly, quantitative job demands have an increasing impact on work-related rumination.

Considering the exact mechanisms through which job demands contribute to work-related rumination, recent studies (Smit & Barber, 2016; Syrek et al., 2017) support the view that ruminative thoughts are triggered by unattained goals (Martin & Tesser, 1996). When a work situation places more demands on employees, they have more to process, more goals to achieve, more unfinished tasks, and thereby more discrepancies in goal attainment (Smit & Barber, 2016; Syrek & Antoni, 2014; Syrek et al., 2017). One study utilised a work planning intervention and demonstrated how attentional shift from workload and uncompleted goals enhanced psychological detachment (Smit & Barber, 2016), thereby providing direct support for the rationale behind increased demands at work, unattained goals, and work-related rumination.

While previous studies have highlighted the role of quantitative job demands in work-related rumination (Berset et al., 2011; Querstret & Cropley, 2012; Sonnentag & Fritz, 2015; Syrek & Antoni, 2014), much less is known about how other types of job demands relate to difficulties in switching off from work. Particularly emotional and cognitive demands may be difficult to leave aside as they are easily relived and processed after work hours (Sonnentag & Fritz, 2015; Cropley & Zijlstra, 2011). Although responding to these job demands is not necessarily stressful, the demands can turn into stressors if the employee has not recovered properly from previous effort (Bakker & Demerouti, 2007; Meijman & Mulder, 1998). Although empirical research to date is scarce on this topic, correlations reported in previous studies suggest that cognitive demands (e.g. decision-making and concentration) and emotional demands (e.g. relating to other people's personal problems) also hinder psychological detachment (Kinnunen, Feldt, Siltaloppi, & Sonnentag, 2011; Oosthuizen, Mostert, & Koekemoer, 2011; Wendsche & Lohmann-Heischl, 2017).

### ***Leadership as an antecedent to work-related rumination***

Despite the increasing body of research on leadership and employee well-being (for reviews, see Harms, Credé, Tynan, Leon, & Jeung, 2017; Skakon, Nielsen, Borg, & Guzman, 2010), there is a gap in the literature regarding the role of leadership in facilitating or hindering employees' recovery process. Consequently, in this study we investigated four leadership behaviours: transformational leadership, supervisor fairness, conflict management, and abusive supervision. Based on the accumulated research, transformational leadership, supervisor fairness, and conflict management can be conceived as resourceful social aspects of the job that support goal attainment and well-being among employees (Bakker & Demerouti, 2007), whereas abusive supervision constitutes a stressor (Harms et al., 2017; Schyns & Schilling, 2013).

Of the leadership behaviours mentioned above, transformational leadership has received research attention in relation to work-related rumination. Transformational leadership refers to inspirational, visionary leaders who convey a higher purpose of the work to followers, which serves the intrinsic needs of followers and motivates them (Bass, 1985; Judge & Piccolo, 2004). High levels of transformational leadership were found to relate to low levels of work-related rumination (Perko,

Kinnunen, & Feldt, 2014) and to alleviate the detrimental effects of time pressure on work-life balance and exhaustion (Syrek, Apostel, & Antoni, 2013). Thus, transformational leadership may facilitate switching off from work and turning to the non-work sphere of life. However, leaders' high performance expectations, an attribute inherent in transformational leadership theory (Bass, 1985), may aggravate rumination. In a diary study, unfinished work tasks at the end of a working week were found to increase work-related rumination and impair sleep quality; both relationships were strengthened by supervisors' high performance expectations, as appraised by employees (Syrek & Antoni, 2014).

Furthermore, supervisory leaders low in the organisational hierarchy—the targets of employee ratings in our study—are likely to have limited possibilities of influence through all aspects of transformational leadership (Alimo-Metcalfe, 2013). Considering this, in the present study, we consider leadership behaviours that are essential in daily supervisory work, but that have received inadequate attention in research, namely taking an active role to resolve social conflicts among employees and fair (just) supervisor behaviours (fair distribution of work and equal treatment of employees). Regarding conflict management, findings from previous studies indicate that employee strain (e.g. sleep disturbances, exhaustion) is lower when supervisors employ an active, collaborative, and discussing style in settling conflicts in work units instead of, for example, being avoidant or authoritatively forceful (Hyde, Jäppinen, Theorell, & Oxenstierna, 2006; Montano, 2016; Way, Jimmieson, & Bordia, 2014).

In addition, we examine abusive supervision as an indicator of unfavourable behaviours. In contrast to resourceful forms of leadership, abusive supervision, referring to subordinates' perception of a "sustained display of hostile verbal and nonverbal behaviours, excluding physical contact" (Tepper, 2000, p. 178), can be considered a job-related demand (Bakker & Demerouti, 2007). Disrespectful treatment by a supervisor requires sustained psychological effort on the part of an employee and has, consequently, psychological costs (Tepper, 2000), for which there is meta-analytic support (Harms et al., 2017; Schyns & Schilling, 2013).

Experience of injustice may explain employee reactions to both low-level supervisor fairness and abusive supervision (Tepper, 2000). Abusive and unfair supervisor behaviours are particularly likely to instigate ruminative thoughts because of the stress-producing experience of threat that is involved in perceptions of injustice (Ford & Huang, 2014). In general, the importance of justice (fairness) of organisational authorities is underpinned by the vast organisational justice literature (Colquitt et al., 2013). With specific regard to employee well-being, findings of a meta-analysis showed that unfairness (injustice, albeit typically measured as low justice) of immediate supervisors explains employee strain such as burnout particularly well (Robbins, Ford, & Tetrick, 2012). The impact of unfair leadership on employee health and well-being is arguably mediated by stressful thoughts as exemplified by work-related rumination (Brosschot et al., 2006). Therefore, less than optimal levels of supervisor fairness, as well as abusive supervision, may increase work-related rumination.

In support of these, to our knowledge, unexplored associations, two daily diary studies examined within-person effects of mistreatment (social conflicts) in the workplace on employee reactions after the workday. Mistreatment by a supervisor predicted negative affective states at bedtime among subordinates (Volmer, 2015) and, similarly, mistreatment by customers predicted rumination during the night and negative mood the next morning (Wang et al., 2013). Thus, there is empirical evidence that social mistreatment increases work-related rumination. Accordingly, we propose that sustained exposure to unfairness and hostility from a supervisor shows similar effects.

### ***Exhaustion as an outcome of work-related rumination***

A significant number of recovery studies have demonstrated a lack of psychological detachment to relate to increased strain reactions, consistent with the stressor-detachment model (for a review, see Sonnentag and Fritz, 2015). In this study, we examined exhaustion as an indicator of strain to which work-related rumination may lead in the long term. Emotional exhaustion, the core component of

occupational burnout, refers to “feelings of being overextended and depleted of one’s emotional and physical resources” (Maslach et al., 2001, p. 399), that is, feelings of tiredness and lack of energy. Given that psychophysiological energy enables proper functioning at work, it is a major resource in a work setting (e.g. Zijlstra, Cropley, & Rydstedt, 2014; Zohar, Tzischinski, & Epstein, 2003). Essentially, recovery can be conceived as the restoration of energy resources (Zijlstra et al., 2014) that are needed for exerting mental and physical effort (Meijman & Mulder, 1998). In support of the exhausting influence of work-related ruminative thoughts, work-related worry and rumination during a respite from work predicted an increase in exhaustion afterwards in a study among academics (Flaxman et al., 2012).

According to conservation of resources theory (COR; Hobfoll, 1989, 2001), resource loss is the primary component in the stress process. The basic tenet of the COR theory is that people strive to obtain, retain, protect, and build entities that are valued (i.e. resources) and potential or actual loss of these valued resources causes psychological stress (Hobfoll, 1989). Resource loss makes people vulnerable to further losses, particularly if they lack resources that would be needed to offset additional losses (Hobfoll, 1989). Thus, the role of resources becomes salient in times of loss when there is a risk for a loss cycle (Hobfoll, 2001). Of relevance to the recovery perspective, stress occurs if individuals fail to gain resources after significant resource investment (Hobfoll, 1989). This is compatible with the notion of exhaustion resulting from impeded recovery after investment of effort in job demands. As for longitudinal evidence, poor psychological detachment predicted an increase in emotional exhaustion within one year (Sonnentag, Binnewies, & Mojza, 2010). Similarly, sustained cognitive activation in the form of preoccupation with thoughts of work during leisure time predicted clinical burnout across two years while controlling for job demands (Söderström, Jeding, Ekstedt, Perski, & Åkerstedt, 2012).

### ***The present study***

Overall, the purpose of the present study was to gain understanding of the long-term development of work-related rumination from a person-centred view. Thus, we aimed to show how job demands, leadership, and exhaustion are experienced by individuals with different long-term profiles of work-related rumination. For this purpose, we utilised models of mental presence of stressors (Brosschot et al., 2006; Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2015) and their impeding effect on recovery as understood in the E-R model (Meijman & Mulder, 1998). In addition, the COR theory principles (Hobfoll, 1989) were utilised to conceive effort expenditure at work as energy investment and recovery as restoration of energy resources (Zijlstra et al., 2014).

Specifically, this study had three goals. First, we aimed to identify latent classes (a priori unknown subgroups) of participants who were similar within classes and different between classes with respect to the development of work-related rumination (WRR). Second, we investigated what was typical for participants in the different WRR classes regarding job demands and leadership across time. Third, we examined how the varying WRR profiles differed across time in exhaustion. Particularly the first goal, concerning the identification of latent classes, was explorative and thereby incompatible with the formation of exact hypotheses, and the two latter goals depended on the first goal. Therefore, we posed only general hypotheses.

Regarding the second goal on job demands and leadership as antecedents of work-related rumination, we hypothesized that employees high in work-related rumination would show generally higher levels of quantitative, cognitive, and emotional job demands compared to employees whose work-related rumination was low (*Hypothesis 1*). Expanding on the second goal, we expected that employees low in work-related rumination would display a favourable pattern of leadership behaviours (*Hypothesis 2*). In other words, leadership behaviours categorised as job resources (transformational leadership, supervisor fairness, conflict management) would be higher and abusive supervision would be lower in comparison to employees with higher levels of work-related rumination. Concerning exhaustion resulting from work-related rumination (goal 3), we built on the idea that energy levels would decline in the long term if the process of energy restoration (recovery)

was impeded by work-related rumination (Hobfoll, 1989; Meijman & Mulder, 1998; Zijlstra et al., 2014). We therefore expected that employees demonstrating constantly high levels of work-related rumination would show particularly high levels of exhaustion (*Hypothesis 3*).

## METHODS

### **Participants and procedure**

This study was part of a larger research project Rewarding and Sustainable Health-Promoting Leadership (Re-Su-Lead) focusing on leadership and employee well-being. A questionnaire study consisting of three measurement waves was conducted across an average total time span of 22 months. Participants in the present study were 625 municipal employees from various occupations in four Finnish cities. The cities' human resources staff recruited work units to participate in the study. We used both online and postal questionnaires to gather data, as not all employees had work e-mail addresses and access to computers at work. The questionnaires were accompanied by a letter stating that participation was voluntary and confidential. The first wave (T1) data were collected in the early spring of 2011, the second wave (T2) about 14 months later in the late spring of 2012, and the third wave (T3) in the early 2013, about 8 months after T2. These time lags were mainly determined based on the schedule of an intervention that was conducted in other countries participating in the project. The response rate at baseline was 62.5% (for details of the T1 sample and participant recruitment, see Perko et al., 2014). Of the T1 participants, 47.2% continued participation at T2. At T2, new employees were eligible to participate in the study (71 new employees entered) and non-respondents from T1 were re-invited to participate, yielding a response rate of 36.2%. At T3, questionnaires were sent only to former participants and 52.9% responded.

In the present study, we included all the participants who completed one ( $n = 258$ ) or several ( $n = 367$ ) of the consecutive three questionnaires and who stayed in a subordinate position across the study period. Hence, the sample size varied between the measurement waves (at T1,  $N = 554$ , at T2,  $N = 333$ , and at T3,  $N = 294$ ). Regarding longitudinal participation, 262, 225, and 258 employees responded at both T1 and T2, both T2 and T3, and both T1 and T3, respectively. One hundred and eighty-nine employees responded across all three waves.

The 625 participants ( $N = 554$  at T1 increased by 71 new participants at T2) worked in diverse occupations, including child care (21.1%), teaching (20.6%), cleaning (19.5%), catering (11.5%), property maintenance (7.4%), nursing and assistance (7.0%), and others (12.9%) such as secretary, administrative, and social work. Women comprised most of the participants (85.0%). The mean age was 48.7 ( $SD = 10.0$ ), and age range was 21–66 years. Participants were from a range of educational backgrounds. The highest level of education completed was comprehensive school for 11.6% of participants, vocational qualifications or matriculation examination for 43.3%, a bachelor's degree or equivalent for 21.8%, and 23.4% of the participants had (at least) a master's degree or equivalent. Considering T1 participants, almost all (94.7%) had a permanent work contract as opposed to a temporary one (5.3%).

### **Sample attrition**

As reported previously (Perko et al., 2014), there were slightly more women among the respondents at T1 as compared to the population in the work units (85% vs. 81%). Respondents who continued participation at T2 ( $n = 262$ ) did not differ from those who discontinued participation ( $n = 292$ ) at T2 with respect to their ratings in any of the study variables at T1, or in gender or age (Perko, Kinnunen, Tolvanen, & Feldt, 2016). Concerning attrition between T2 and T3, participants who dropped out at T3 ( $n = 108$ ) reported higher levels of exhaustion at T2 ( $M = 2.48$  vs.  $M = 1.93$ ),  $U = 8924.50$ ,  $p < .001$  than those who continued participation at T3 ( $n = 225$ ). There were no differences in other study variables, gender, or education level, but those who continued participation at T3 were slightly older ( $M = 49.36$  vs.  $M = 46.77$ ) than those who discontinued after T2,  $t(173.23) = -2.11$ ,  $p = .036$ . Concerning attrition between T1 and T3, we found that respondents ( $n = 258$ ) reported slightly more

favourable values in transformational leadership ( $M = 3.23$  vs.  $M = 3.05$ ),  $t(544.91) = -2.38$ ,  $p = .018$ , and conflict management ( $M = 3.87$  vs.  $M = 3.60$ ),  $U = 43536.00$ ,  $p = .001$  than did drop-outs ( $n = 296$ ). With respect to background variables, respondents at T3 were older ( $M = 49.19$  vs.  $M = 47.34$ ),  $t(539.02) = -2.26$ ,  $p = .025$  than non-respondents. Additionally, sample attrition between T1–T3 can be partly due to actual turnover, as drop-outs (7.8%) more often than respondents at T3 (2.4%) had a fixed-term work contract,  $\chi^2(df = 1) = 8.06$ ,  $p = .005$ .

Summarising, women and older employees were somewhat more active to take part in the study than men and younger employees. Regarding the study variables, we concluded that the data were somewhat biased because of sample attrition. Due to attrition, specifically at T3, the highest levels in exhaustion and lowest levels in transformational leadership and conflict management were underrepresented in the sample used.

### **Measures**

All measures were assessed in the three waves and showed acceptable internal consistencies (Cronbach's  $\alpha$ ).

*Work-related rumination* was assessed with the following three items (translated from the original German 3-item measure on cognitive irritation): "I have difficulty relaxing after work", "Even at home I often have to think about my problems at work", and "Even on holiday I sometimes must think about my problems at work" (Mohr, Müller, Rigotti, Aycan, & Tschan, 2006). Responses were given on a Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach's  $\alpha$  calculated for each measurement wave varied from .77 to .81.

*Job demands. Workload* was assessed with the 5-item Quantitative Workload Inventory (Spector & Jex, 1998) that measures the amount of work in terms of pace and volume (e.g. "How often does your job leave you with little time to get things done?"). Responses were given on a scale from 1 (*very seldom or never*) to 5 (*very often or always*). Cronbach's  $\alpha$  was .83 at all measurement points. *Cognitive demands* were measured with the 4-item scale (e.g. "Does your work require you to make complex decisions?") from the Copenhagen Psychosocial Questionnaire (COPSOQ II; Pejtersen, Kristensen, Borg, & Bjorner, 2010). The rating scale ranged from 1 (*very seldom or never*) to 5 (*very often or always*). Cronbach's  $\alpha$  varied from .84 to .85. *Emotional demands* were likewise assessed with the 4-item scale (e.g. "Does your work put you in emotionally disturbing situations?") from the COPSOQ II (Pejtersen et al., 2010). For two items, the rating scale ranged from 1 (*very seldom or never*) to 5 (*very often or always*), and for two other items, from 1 (*to a very small extent*) to 5 (*to a very large extent*). Cronbach's  $\alpha$  varied between .84 and .86.

*Leadership. Transformational leadership* was measured with the Global Transformational Leadership Scale (Carless, Wearing, & Mann, 2000) comprising seven items (e.g. "My immediate superior instils pride and respect in others and inspires me by being highly competent"). The rating scale varied from 1 (*to a very small extent*) to 5 (*to a very large extent*). Cronbach's  $\alpha$  ranged from .90 to .91. *Supervisor fairness* was measured with two fairness-specific items ("Does your immediate superior treat the workers fairly and equally?" and "Does your immediate superior distribute the work fairly and impartially?") from the 3-item fair leadership scale in the QPS Nordic questionnaire (Dallner et al., 2000). The third item of the original scale concerned a stressful relationship between the supervisor and the employee and was not measured in this study because it was unspecific with regard to fairness. Further, the omitted item showed a low loading (-.42) on the factor of supervisor fairness in the validation study (Dallner et al., 2000). Responses were given on a scale from 1 (*very seldom or never*) to 5 (*very often or always*). Correlations of the two items varied between .79 and .86. *Conflict management* was assessed with a 3-item conflict management subscale from the health-promoting leadership scale (Vincent, 2012). The items (e.g. "My immediate superior searches for solutions to conflicts with those involved") were rated on a scale from 1 (*strongly disagree*) to 5 (*strongly disagree*). Cronbach's  $\alpha$  varied from .79 to .80. *Abusive supervision* was measured with the shortened abusive supervision scale (Mitchell & Ambrose, 2007; Tepper, 2000) consisting of five items on active abuse (e.g. "My nearest superior puts me down in front of others"). The rating scale

varied from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach's  $\alpha$  ranged between .90 and .92.

*Exhaustion* was measured with three items (e.g. "I feel burned out from my work") from the 5-item exhaustion subscale of the Finnish version of Maslach Burnout Inventory (Kalimo, Hakanen, & Toppinen-Tanner, 2006). Responses were given on a scale from 0 (*never*) to 6 (*every day*). Cronbach's  $\alpha$  varied from .82 to .85.

*Background factors.* We additionally examined whether the latent classes differed in age, gender, and education level. Higher education has been found to relate to higher work-related rumination in population-based samples (Cropley & Zijlstra, 2011; Van Laethem et al., 2015). Furthermore, we were able to examine whether changes in perceived leadership were explained by replacement of the person being rated between the measurement times.

Correlations among the study variables are presented in Table 1. Cross-sectional correlations are presented at T1, when the sample size was largest, and longitudinal correlations are shown for the longest time lag, T1–T3.

Table 1. Correlations of the study variables at T1 and T1–T3.

	1	2	3	4	5	6	7	8	9
1 Work-related rumination	.65***	.22***	.23***	.30***	-.11	-.22***	-.15*	.16*	.26***
2 Workload	.30***	.61***	.28***	.25***	.03	-.04	-.03	.01	.17**
3 Cognitive demands	.25***	.30***	.79***	.66***	.15*	.05	.04	.04	-.01
4 Emotional demands	.35***	.31***	.65***	.74***	.02	-.14*	-.08	.16**	.14*
5 Transform. leadership	-.11**	-.01	.16***	.10*	.56***	.54***	.44***	-.30***	-.06
6 Supervisor fairness	-.17***	-.05	.10*	-.02	.68***	.55***	.36***	-.29***	-.15*
7 Conflict management	-.13**	-.08	.16***	.04	.72***	.66***	.56***	-.35***	-.14*
8 Abusive supervision	.15***	.06	.01	.08	-.43***	-.54***	-.51***	.56***	.12
9 Exhaustion	.51***	.38***	.04	.24***	-.21***	-.26***	-.31***	.20***	.54***

*Note.* T1 correlations ( $N = 544$ – $554$ ) below the diagonal. T1–T3 correlations ( $N = 254$ – $258$ ) above the diagonal (autocorrelations on the diagonal).

T1–T3 correlations for leadership were .63\*\*\* – .70\*\*\* when only participants who rated the same leader across time were included ( $n = 213$ ).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Statistical analyses

The analysis comprised a person- and variable-centred phase. First, factor mixture modelling (Lubke & Muthén, 2005) was used to identify latent classes of participants across the three measurement points based on sum scores of work-related rumination. Latent classes refer to latent subpopulations in the data not known beforehand but that can be analysed with various mixture modelling techniques (Lubke & Muthén, 2005). The factor mixture analysis was performed with Mplus (version 7.3, Muthén & Muthén 1998–2012). The method of estimation was maximum likelihood with robust standard errors (MLR). Missing data were handled through full information maximum likelihood (FIML), which enables the use of all available information without imputing values (Little, 2013). Thus, all participants who responded in any of the measurement waves could be included.

In the factor mixture analysis, the covariance of observed variables within classes was modelled through a common factor that captured individual variation in the level of work-related rumination across time (Lubke & Muthén, 2005). The intercept of the level factor was fixed to zero in



the overall part of the model, and class-specific mean values (indicators of the latent level factor) were estimated. Acknowledging the limitations of our incomplete longitudinal data, this parsimonious model successfully served our aim to capture all mean-level change in work-related rumination that occurred in each latent class. Further, multiple statistical criteria were used to determine the final number of classes (Nylund, Asparouhov, & Muthén, 2007, see Table 2). Regarding the Akaike's Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the sample size adjusted BIC (Adj. BIC), the lowest value indicates the best solution. The Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR), the Lo-Mendel-Rubin likelihood ratio test (LMR), and the (parametric) bootstrapped likelihood ratio test (BLRT) assess the improvement in model fit when the number of latent classes increases by one. The  $p$ -value indicates whether the improvement in model fit is significant for the inclusion of one more class. Concerning classification quality (entropy and average posterior probabilities for most likely latent class membership), values close to 1 indicate clear classification (Muthén, 1998-2004).

In addition, selection of the final model was based on the substantive meaningfulness and interpretability of the solution as well as the stability of a given class across the solutions (Lubke & Muthén, 2005). After the latent class solution was determined, we additionally tested whether changes in work-related rumination (model variable) within the classes were significant using Wald's test in Mplus.

Second, job demands, leadership and exhaustion were compared between the classes as distal observed variables, that is, variables outside the latent class model (Asparouhov & Muthén, 2014). These analyses were performed considering the uncertainty related to group membership by using posterior probabilities and thereby treating the latent class variable as a latent and not observed variable. For this purpose, we used the automatic BCH method as implemented in Mplus (Asparouhov & Muthén, 2014). This method has been shown to best preserve the original latent class solution when comparing distal variables, and performs well even if the variances of distal variables vary substantially across classes. The procedure yields overall results on differences in mean values between classes based on the Wald's chi-square test and additionally pairwise comparisons. We compared job demands, leadership, and exhaustion between the latent classes at the beginning (T1,  $N = 554$ ) and end of the study period (T3,  $N = 294$ ).

To examine changes within classes, we calculated change scores for the distal variables. First, utilising the most likely latent class, change scores were calculated (in SPSS) by subtracting the mean value of the distal variable at an earlier time point from its mean value at the later time point (e.g. T3 mean–T1 mean). Thus, negative values indicated a decrease and positive values indicated an increase in the distal variable. Importantly, the change scores were then re-estimated within the latent classes using posterior probabilities as the basis for the latent classes. To determine whether change was significant, we calculated Student's  $t$ -test results (with degrees of freedom estimated as  $n-1$ , based on the mostly likely latent class). Altogether, development of distal variables was investigated in all three time lags, that is, T1–T2 ( $n = 262$ ), T2–T3 ( $n = 225$ ), and T1–T3 ( $n = 258$ ). These analyses comprised only those participants in the incomplete longitudinal data who had participated at both measurement times in question.

## RESULTS

### ***Identifying latent classes of work-related rumination***

The fit indices and class sizes of alternate class solutions in the factor mixture analysis are presented in Table 2. Among the varying statistical criteria, we relied primarily on BIC and BLRT as these indicators have performed well in simulation studies (Nylund et al., 2007; Tolvanen, 2007). In a comparison of the models, BIC suggested the five-class solution fit the data best. BLRT indicated that the fit of the five-class solution was significantly ( $p < .001$ ) better than the fit of the four-class solution, and further, that the six-class solution fit significantly ( $p = .010$ ) better than the five-class solution. The solutions for five and six classes were carefully compared after which we selected the

five-class solution as the final model. This decision was based on parsimony in modelling and the low added substantive value of another small increasing pattern ( $n = 4$ ) in the six-class model. The average probabilities for the most likely latent class membership varied between .727 and .895, thereby indicating acceptable clarity of classification.

Table 2. Fit indices for factor mixture models of work-related rumination with different class solutions.

Number of classes	LogL (no. of free parameters)	AIC	BIC	Adj. BIC	$p$ -values for			Class sizes based on the most likely latent class membership	Entropy
					VLMR	LMR	BLRT		
1	-1992.980 (7)	3999.960	4031.024	4008.800	-	-	-	625	
2	-1961.569 (11)	3945.138	3993.953	3959.030	.1091	.1170	.0000	422, 203	.678
3	-1943.084 (15)	3916.169	3982.735	3935.112	<b>.0118</b>	<b>.0135</b>	.0000	183, 38, 404	.678
4	-1920.571 (19)	3879.141	3963.458	3903.136	.4847	.4949	.0000	309, 163, 62, 91	.707
5	-1903.669 (23)	3853.339	<b>3955.407</b>	3882.385	.1129	.1181	.0000	308, 17, 44, 84, 172	.714
6	-1893.239 (27)	3840.477	3960.296	3874.575	<b>.0151</b>	<b>.0168</b>	<b>.0100</b>	42, 175, 302, 17, 4, 85	<b>.735</b>
7	<b>-1886.102 (31)</b>	<b>3834.204</b>	3971.775	<b>3873.354</b>	.6977	.7058	.0600	19, 63, 128, 44, 48, 265, 58	.692

Note. Figures indicating the statistically most favourable class solution are in bold.

The five classes demonstrated low, increasing, decreasing, high, and moderate profiles of work-related rumination, and were labelled accordingly (see Supplementary Figure 1). The model-based mean values of work-related rumination within each class are shown in Table 3. The largest and thereby most typical latent class, *Low*, consisted of participants who remained constantly low in work-related rumination (with overall class counts based on posterior probabilities  $n = 291$ , 46.7%). Despite staying low in all time frames examined, the *Low* class showed a slight increase in work-related rumination in T1–T2 ( $p = .013$ ). Salient change patterns in work-related rumination occurred in the *Increasing* ( $n = 36$ , 5.8%) and *Decreasing* ( $n = 65$ , 10.4%) classes, in which the same change trend continued from T1–T2 further to T2–T3. The changes in these classes were significant ( $p < .001$ ) for all three time frames (except the *Increasing* class T1–T2,  $p < .01$ , and *Decreasing* class T2–T3,  $p < .05$ ). These change classes jointly formed a 16.2% minority of the participants. Also, constantly *High* work-related rumination ( $n = 77$ , 12.5%) was atypical. In the *High* class, there was a slight decrease in work-related rumination in T1–T2 ( $p = .022$ ) that a decrease in T1–T3 ( $p = .032$ ) also reflected. In the *Moderate* class the participants repeatedly reported work-related rumination above the sample means ( $n = 154$ , 24.7%), but the ratings remained lower than those of the *High* class. The *Moderate* class was the most stable without any significant changes in work-related rumination. In sum, low and moderate levels of work-related rumination were more typical than constantly high or predominantly changing levels.

Table 3. Mean values of the study variables at each measurement wave within the latent classes of work-related rumination and mean-level differences between the latent classes at T1 and T3.

	Scale	(1) Low ( <i>n</i> = 291, 46.7%)			(2) Increasing ( <i>n</i> = 36, 5.8%)			(3) Decreasing ( <i>n</i> = 65, 10.4 %)			(4) High ( <i>n</i> = 77, 12.5 %)			(5) Moderate ( <i>n</i> = 154, 24.7 %)			Overall test	T1 Pairwise comparisons	Overall test	T3 Pairwise comparisons
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3				
		<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>				
Work-related rumination	1-7	1.69 (.07)	1.92 (.09)	1.79 (.09)	2.33 (.31)	3.45 (.55)	4.83 (.56)	4.41 (.19)	2.77 (.32)	2.01 (.19)	5.62 (.18)	5.00 (.25)	5.10 (.18)	3.66 (.16)	3.81 (.28)	3.76 (.20)				
<i>Job demands</i>																				
Workload	1-5	3.44 (.45)	3.52 (.06)	3.39 (.07)	3.43 (.16)	3.65 (.16)	3.73 (.19)	3.80 (.13)	3.57 (.13)	3.56 (.14)	4.03 (.10)	3.97 (.16)	3.97 (.14)	3.74 (.07)	3.74 (.10)	3.68 (.11)	49.51***	1 < 3, 4, 5; 2, 5 < 4	17.84**	1 < 4, 5
Cognitive demands	1-5	3.52 (.06)	3.72 (.08)	3.65 (.08)	3.78 (.17)	3.74 (.19)	3.85 (.19)	3.81 (.15)	3.76 (.18)	3.69 (.19)	4.11 (.10)	4.27 (.19)	4.28 (.18)	3.94 (.08)	4.21 (.13)	4.27 (.14)	38.84***	1 < 4, 5	23.04***	1, 3 < 4, 5
Emotional demands	1-5	2.93 (.07)	3.06 (.10)	2.96 (.10)	3.26 (.32)	3.21 (.27)	3.36 (.25)	3.36 (.19)	3.00 (.20)	3.06 (.19)	4.03 (.12)	3.92 (.23)	4.02 (.21)	3.37 (.11)	3.77 (.16)	3.77 (.16)	69.90***	1 < 3, 4, 5; 4 > 2, 3, 5	32.91***	1 < 4, 5; 3 < 5; 4 > 2, 3
<i>Leadership</i>																				
Transform. leadership	1-5	3.27 (.06)	3.46 (.08)	3.55 (.09)	3.15 (.28)	3.52 (.24)	3.12 (.26)	3.25 (.18)	3.46 (.15)	3.38 (.22)	2.85 (.14)	3.23 (.20)	3.29 (.18)	2.99 (.11)	3.04 (.15)	3.37 (.15)	11.26*	1 > 4, 5	4.17 ns	
Supervisor fairness	1-5	3.99 (.07)	4.08 (.81)	4.07 (.09)	3.41 (.36)	3.72 (.28)	3.57 (.33)	3.99 (.19)	4.00 (.18)	3.69 (.27)	3.18 (.16)	3.18 (.28)	3.19 (.28)	3.64 (.14)	3.75 (.18)	3.84 (.21)	24.19***	1 > 4, 5; 4 < 3, 5	13.18*	1 > 4
Conflict management	1-5	3.90 (.07)	4.06 (.09)	4.11 (.09)	3.65 (.28)	3.50 (.25)	3.60 (.28)	4.07 (.18)	3.93 (.20)	4.02 (.20)	3.30 (.14)	3.50 (.25)	3.65 (.22)	3.51 (.12)	3.51 (.17)	3.78 (.18)	20.30***	1 > 4, 5; 3 > 4, 5	7.30 ns	
Abusive supervision	1-7	1.25 (.05)	1.19 (.07)	1.13 (.07)	1.37 (.22)	1.66 (.25)	1.67 (.27)	1.06 (.10)	1.22 (.17)	1.36 (.20)	1.69 (.16)	1.49 (.30)	1.41 (.19)	1.91 (.16)	1.93 (.21)	1.69 (.21)	25.23***	1 < 4, 5; 3 < 4, 5	11.64*	1 < 5
Exhaustion	0-6	1.63 (.09)	1.56 (.12)	1.57 (.15)	1.59 (.31)	2.69 (.43)	2.91 (.66)	2.81 (.30)	1.53 (.25)	1.37 (.26)	4.14 (.19)	3.94 (.37)	3.66 (.36)	2.59 (.17)	2.56 (.24)	2.32 (.25)	185.69***	1, 2 < 3, 4, 5; 3, 5 < 4	37.99***	1 < 2, 4, 5; 3 < 2, 4, 5; 4 < 5

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

**Differences in job demands, leadership, and exhaustion between the latent classes**

*Job demands.* As seen in Table 3, the overall test results for differences between the latent classes showed that the WRR classes differed for all job demands both at T1 and T3. Pairwise comparisons showed that the participants in the higher WRR classes consistently reported higher job demands than the participants in the lower WRR classes (see Supplementary Figures 3 and 4). Comparing types of job demands, the differences were particularly salient for emotional job demands.

*Leadership.* At T1, the WRR classes differed in all leadership behaviours with participants in the *Low* and *Decreasing* WRR class mostly reporting more favourable leadership behaviours than the *Moderate* and *High* WRR classes. Differences were strongest in supervisor fairness and abusive supervision, which were also the only leadership behaviours showing significant differences between the WRR classes at T3 (Table 3 and Supplementary Figure 5).

*Exhaustion.* There were particularly salient differences between the WRR classes in exhaustion both at T1 and T3. Pairwise comparisons showed that these differences were in accordance with the levels of work-related rumination, concerning also the *Increasing* and *Decreasing* WRR classes (Table 3 and Supplementary Figure 2).

*Changes in job demands, leadership, and exhaustion within the latent classes*

Table 4 shows change scores for job demands, leadership, and exhaustion within the latent classes in T1–T3 (the number of participants in each class and time lag can be seen below the table).

Table 4. Changes in job demands, leadership and exhaustion within the latent classes on work-related rumination in T1-T3.

	(1) Low WRR Change <i>M</i> ( <i>SE</i> )	(2) Increasing WRR Change <i>M</i> ( <i>SE</i> )	(3) Decreasing WRR Change <i>M</i> ( <i>SE</i> )	(4) High WRR Change <i>M</i> ( <i>SE</i> )	(5) Moderate WRR Change <i>M</i> ( <i>SE</i> )
<i>Job demands</i>					
Workload	-0.10 (.07)	0.32 (.16)	-0.33 (.12)*	-0.18 (.14)	-0.08 (.12)
Cognitive demands	0.19 (.06)*	0.02 (.11)	-0.22 (.10)*	0.16 (.10)	0.15 (.12)
Emotional demands	0.10 (.08)	0.20 (.27)	-0.43 (.16)*	-0.01 (.16)	0.33 (.17)*
<i>Leadership</i>					
Transform. leadership	0.22 (.09)*	0.04 (.20)	0.10 (.20)	0.37 (.21)	0.19 (.16)
Supervisor fairness	-0.09 (.12)	0.24 (.27)	-0.25 (.24)	0.10 (.25)	-0.07 (.19)
Conflict management	0.07 (.10)	0.04 (.23)	0.02 (.25)	0.15 (.19)	-0.01 (.18)
Abusive supervision	-0.08 (.08)	0.26 (.25)	0.37 (.20)	-0.27 (.21)	-0.05 (.23)
<i>Exhaustion</i>					
	-0.07 (.15)	1.20 (.36)**	-1.64 (.35)***	-0.38 (.31)	0.03 (.32)

*Note.* Longitudinal participants in each class (based on the most likely latent class) in T1-T3 (1) *n* = 114, (2) *n* = 16, (3) *n* = 27, (4) *n* = 35, (5) *n* = 66, T1-T2 (1) *n* = 113, (2) *n* = 17, (3) *n* = 30, (4) *n* = 30, (5) *n* = 72, and in T2-T3 (1) *n* = 106, (2) *n* = 16, (3) *n* = 22, (4) *n* = 24, (5) *n* = 57.

\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

*Job demands.* As seen in Table 4, the *Decreasing* class showed a significant decrease in all job demands between T1 and T3, that is, in workload, cognitive demands, and emotional demands. The increase in cognitive demands in the *Low* class and the increase in emotional demands in the *Moderate* class were also significant in T1–T3. Considering the study period divided in two shorter time lags (T1–T2 and T2–T3), cognitive demands increased in the *Low* class T1–T2 (change *M* = 0.22, *p* < .001, *SE* = .06) in accordance with slightly increasing work-related rumination. Moreover, there

were some significant short-term changes in job demands that occurred in classes that showed no significant change in work-related rumination in the time frame in question: workload decreased in the *Low* class in T2–T3 (change  $M = -0.14$ ,  $p < .05$ ,  $SE = .06$ ) while emotional demands increased in the *Moderate* class in T1–T2 (change  $M = 0.35$ ,  $p < .05$ ,  $SE = .15$ ) and in the *High* class in T2–T3 (change  $M = 0.36$ ,  $p < .05$ ,  $SE = .17$ ).

**Leadership.** Leadership was considerably more stable within the WRR classes as compared to job demands. However, transformational leadership and abusive supervision showed significant changes within the classes. In T1–T3, transformational leadership increased in the *Low* class (Table 4). Specifically, in the *Increasing* WRR class, that showed increases in work-related rumination, abusive supervision increased in T1–T2 (change  $M = 0.28$ ,  $p < .05$ ,  $SE = .12$ ) and transformational leadership decreased in T2–T3 (change  $M = 0.22$ ,  $p < .05$ ,  $SE = .09$ ). The significant decrease in transformational leadership in T2–T3 occurred independent of an actual change of the target leader, because in T2–T3, none of the participants in the *Increasing* class changed their leader across time. In T1–T2, after excluding two participants whose leader changed, the change in abusive supervision did not remain significant. It is noteworthy that 58.8% ( $n = 10$ ) of the participants in the *Increasing* class did not face abusive supervision at all (responded “strongly disagree” to all items), which is only slightly lower than the proportion in the sample as a whole, 66.5% at T1. Concerning the *Low* class, a closer inspection revealed that the increase in transformational leadership in T1–T3 was significant only among those 23 participants who rated a different leader at T1 as compared to T3. Thus, for some participants, a change of leader possibly contributed to a change in leadership ratings.

**Exhaustion.** In T1–T3, exhaustion increased significantly in the *Increasing* class and decreased significantly in the *Decreasing* class (Table 4). Similar changes were found in T1–T2 for the *Increasing* class ( $M = 1.05$ ,  $p < .01$ ,  $SE = .32$ ) and *Decreasing* class ( $M = -1.12$ ,  $p < .01$ ,  $SE = .35$ ). There were no significant changes in exhaustion in T2–T3.

#### *Background factors between the latent classes*

Using posterior probabilities in Mplus, significant differences were found in age:  $\chi^2(df = 4) = 11.52$ ,  $p = .012$ , gender:  $\chi^2(df = 4) = 108.93$ ,  $p < .001$ , and level of education:  $\chi^2(df = 4) = 44.69$ ,  $p < .001$ . Specifically, participants in the *High* WRR class were somewhat younger ( $M = 45.60$ ,  $SE = 1.37$ ) than participants in the *Low* ( $M = 49.35$ ,  $SE = 0.66$ ) and *Increasing* WRR classes ( $M = 53.09$ ,  $SE = 2.20$ ). Regarding education, participants with higher education were overrepresented in the *High* and *Moderate* WRR classes as compared to the *Low* WRR class ( $p < .001$ ). Concerning gender, the *Increasing* class differed from all other classes because it included disproportionately more women.

## DISCUSSION

This longitudinal study investigated the development of work-related rumination from a person-centred perspective (Bergman et al., 2003; Bergman & Trost, 2006). Accordingly, the core contribution of this study is the description of divergent long-term profiles of work-related rumination and how individuals with different WRR profiles meaningfully differ in job demands, leadership, and exhaustion.

#### **Long-term profiles of work-related rumination**

Concerning the first goal of the study, five latent classes displaying different profiles of work-related rumination were identified. The participants in these classes demonstrated *Low* (46.7%), *Moderate* (24.7%), *High* (12.5%), *Increasing* (5.8%), and *Decreasing* (10.4%) levels of work-related rumination. Only the small *Increasing* and *Decreasing* WRR classes showed clear change trends that continued throughout the study period of nearly two years.

The second and third goal of this study pertained to characteristics of the latent WRR classes that were theoretically considered as antecedents and consequences for work-related rumination. The three generally formulated hypotheses on job demands, leadership, and exhaustion mainly gained support from our results. More specifically, Hypothesis 1 received strong support, as

participants in the higher WRR classes consistently reported higher levels of job demands than participants in the lower WRR classes. This was noticeable also in the *Decreasing* WRR class, in which the participants across nearly two years reported decreases in workload, cognitive demands, and emotional demands in accordance with constant decreases in work-related rumination. Furthermore, supporting Hypothesis 2, the participants in the lower WRR classes reported more favourable leadership behaviours than participants in the higher WRR classes. In particular, the *Low* WRR class reported more supervisor fairness and conflict management, accompanied by less abusive supervision than did participants in the *High* and *Moderate* WRR classes.

Regarding the third aim of the study and consistent with Hypothesis 3, participants in the classes that reported chronically high work-related rumination, especially the *High* WRR class, indicated higher exhaustion levels than did participants in other classes. In addition, particularly the *Increasing* and *Decreasing* class demonstrated changes in exhaustion that were fully congruent with their changes in work-related rumination. Altogether, the results revealed a notably close connection between exhaustion and work-related rumination at the person level. Implications of the results are next discussed in more detail.

### ***Theoretical contributions***

***Job demands and leadership.*** Our findings concerning job demands are consistent with the stressor-detachment model, stating that job demands make it more difficult to disengage from work (Sonnentag & Fritz, 2015), as well as previous variable-oriented findings specifically on the positive relationship between job demands and work-related rumination (Berset et al., 2011; Cropley & Purvis, 2003; Querstret & Cropley, 2012; Syrek & Antoni, 2014). While previous studies have mainly examined quantitative job demands, in this study we found that cognitive and particularly emotional demands showed salient differences between the WRR classes. In addition, findings on decreasing job demands in the *Decreasing* WRR class support these notions. Thus, specifically, some emotional aspects of work are involved in the induction of rumination. This finding is in line with previous studies showing that demanding emotional events at work increase rumination (Wang et al., 2013) and, more generally, that especially emotional job demands along with work pressure interfered with individuals' functioning in various non-work roles (Oosthuizen et al., 2011).

Our result that participants in the higher WRR classes were more highly educated than participants in lower WRR classes is in accordance with previous findings indicating that perseverant work-related thoughts are more prevalent in higher socio-economic groups (Cropley & Zijlstra, 2011; Van Laethem et al., 2015). These results highlight that the type of job matters in the propensity for work-related rumination, as individuals in higher socio-economic groups are likely to possess a more complex job. It seems that the more the job requires making complex decisions, remembering, and coming up with new ideas, information processing may easily continue after work hours in an employee's mind, even when not deliberately engaging in those thought processes.

Considering the potentially detrimental role of job demands, job-related resources are relevant as they counterbalance the effects of high job demands (Bakker & Demerouti, 2007; Hobfoll, 2001; Wang et al., 2013; Volmer, 2015). Elaborating the role of job resources, it has been shown that the exhausting effect of emotional job demands can be mitigated by emotional support from supervisors and colleagues (de Jonge, Le Blanc, Peeters, & Noordam, 2008). In the current study, we expected and found that work-related rumination was particularly high among employees reporting high job demands and low resources in leadership. Thus, participants reporting the highest levels of emotional job demands and work-related rumination seemed to lack the buffering resources in leadership.

Comparing leadership behaviours, the WRR classes differed especially in supervisor fairness along with abusive supervision. Thus, supervisor fairness, concerning respectful, equal treatment and fair distribution of work, appears to be the most efficient aspect of leadership with regard to preventing work-related rumination. Both abusive supervision and supervisor fairness centre around respect in employee treatment, which has been dealt with as interpersonal justice in the

organisational justice literature (Colquitt et al., 2013; Ford & Huang, 2014). Also, considering unfairness and abusive behaviours, it is clear that these types of leadership behaviours more easily turn into real stressors, as compared to mere deficiencies in implementing more resourceful aspects of leadership. In sum, the finding that elevated levels of work-related rumination are associated with breaches of justice in leadership is consistent with organisational justice literature conceiving supervisors as organisational authorities whose justice behaviours are highly influential in terms of strain among employees (Colquitt et al., 2013; Robbins et al., 2012).

In general, leadership behaviours were considerably more stable within the WRR classes than job demands. This clearly reflects the fact that most of the participants rated the same leader across time, and the style and behaviours of individual leaders are stable across time to a relatively high degree. Altogether, changes within classes were found only for transformational leadership and abusive supervision. Although these changes could be partly attributed to change of the person being rated, particularly the results concerning the *Increasing* class leave open the question of whether only the employee perceptions changed or the same leader actually changed his or her behaviours. Considering both transformational leadership and abusive supervision, these leadership constructs can be seen to involve more affective content than the other constructs. A body of knowledge indicates that in addition to actual leader behaviours, various forms of employee affect are influential in employees' leadership ratings (e.g. Brown & Keeping, 2005; Hansbrough, Lord, & Schyns, 2015).

Although the participants in the *Decreasing* class showed no changes in leadership, it is important to note, however, that they initially reported lower emotional demands, more supervisor fairness, and conflict management, and less abusive supervision than did the participants who were constantly high in work-related rumination. Thus, these factors seem to facilitate favourable change in work-related rumination.

*Exhaustion and the profiles of work-related rumination.* Our results revealed a particularly consistent and strong connection between work-related rumination and exhaustion, which pertained to both differences between persons and changes within persons. This association as such is consistent with previous findings from variable-oriented studies (Flaxman et al., 2012; Querstret & Cropley, 2012) and compatible with the notion of energy deficiency resulting from a disrupted recovery process (Sonnentag & Fritz, 2015; Zijlstra et al., 2014). However, without the person-centred approach, we would not know that precisely the same participants who report increasing and decreasing work-related rumination, also display concurrent, corresponding changes in exhaustion. Although it is reasonable to assume that work-related rumination impedes the recovery process and thereby contributes to exhaustion (Geurts & Sonnentag, 2006; Sonnentag & Fritz, 2015), the finding of such a close connection between ruminative thoughts and energy deficiency evidently calls for deeper understanding of the relationship at the level of the individual.

In this regard, it is very interesting to note that also other types of studies have produced results that point to congruence. First, in a quasi-experimental study, rumination and fatigue decreased simultaneously after a cognitive-behavioural intervention on work-related rumination (Querstret, Cropley, Kruger, & Heron, 2016). Second, longitudinal variable-centred studies have found not only that poor psychological detachment predicts exhaustion (Sonnentag et al., 2010), but also that exhaustion predicts poor psychological detachment (Sonnentag, Arbeus, Mahn, & Fritz, 2014). Third, one study found that all participants, both compulsive and non-compulsive workers, ruminated less about work during their vacation (de Bloom et al., 2014). Importantly, this effect persisted two weeks after returning to work. Obviously, during and after a vacation people have higher levels of energetic psychological resources available, and these resources seem to act as a buffer against rumination, even when demands of the job are present again.

Altogether, it seems appropriate to assume that particularly the combination of depleted energetic resources and high work demands functions as a breeding ground for ruminative thoughts. Exhausted individuals need to raise the level of subjective effort to meet work demands, and their lack of energetic resources makes work-related goals more difficult to attain (Meijman & Mulder, 1998). These discrepancies in goal attainment, in turn, instigate ruminative thoughts (Martin &

Tesser, 1996). The view that emphasises the availability of energy resources is supported especially by the vacation study mentioned above (de Bloom et al., 2014). In further support, exhaustion and time pressure have been shown to interact in predicting poor psychological detachment (Sonnentag et al., 2014).

From a long-term person-centred perspective, perseverant, stressful work-related thoughts and exhaustion can be considered as inextricably interwoven components of the same deteriorating process of psychological well-being (Bergman & Lundh, 2015; Bergman & Trost, 2006). Applying the COR theory, this is essentially a loss cycle in terms of energy depletion and failure to restore lost energetic resources which rumination further consumes. Without proper recovery and regain of energy, short-term load reactions accumulate and become more harmful (Meijman & Mulder, 1998; Sonnentag et al., 2010). Thus, our results concur with the notion of Querstret et al. (2016) that rumination and indicators of lack of energy may be involved in a cycle whereby one feeds the other. However, it is important to bear in mind that negative psychological states and rumination may be related because they are influenced by the same factors (Martin & Tesser, 1996), such as workload (Zohar et al., 2003), conflicts (Volmer, 2015; Wang et al., 2013), or other negative events at work (Bono, Glomb, Shen, Kim, & Koch, 2013). Therefore, a holistic view is needed to understand work-related rumination at the level of the individual, in accordance with the person-centred research paradigm (Bergman & Lundh, 2015; Bergman et al., 2003).

### ***Limitations***

This study is not without limitations. First, the main limitation relates to sample attrition which is a threat to both internal and external validity. In particular, participants reporting higher exhaustion as well as lower transformational leadership and lower conflict management were less likely to participate at T3. Concerning external validity, it is therefore very likely that our study overestimated these leadership behaviours and underestimated true exhaustion levels at T3, which presumably bears on levels of work-related rumination as well. It is also possible that more exhausted employees did not even respond to the first questionnaire, so that their attrition could not be analysed. In addition, attrition may relate to variables not measured in this study. To avoid further loss of information we preferred using all available data where possible. Consequently, only 72%, 84%, and 73% of the participants in T1–T2, T2–T3, and T1–T3, respectively, were the same individuals, due to missing data. We maintain, however, that using all available data brought our results closer to reality than handling missing data listwise (Little, 2013).

Second, most participants were women, which is a further threat to external validity of the study. Although the proportion of women was only slightly higher compared to the situation in the municipal work units taking part in the study, the results may not be generalisable to men. Third, concerning analyses on the distal variables, we used posterior probabilities as the basis for classification where possible, but needed to initially rely on the most likely latent classes when calculating the change scores within the classes. Fourth, this study is subject to the method bias that derives from relying on the same rating source for all the variables. Therefore, it is in principle possible that, for example, high levels of job demands in the higher WRR classes reflect more of the compensatory effort and reactions of exhausted participants than the more objective reality of job requirements. On the other hand, it is necessary to examine subjective experiences when investigating work-related rumination. In this respect, employees themselves are the most suitable assessors of many of our focal variables. Fifth, there seems to be a conceptual contradiction in the scale we used to measure work-related rumination: one of the items concerns difficulty in relaxing after work without any reference to intrusive thoughts. Although difficulty to relax and stressful work-related thoughts are likely to co-occur, as also indicated by good internal consistency of the measure, it is possible that the nature of this item may have affected the results by the reference to psychophysiological tension.



### ***Suggestions for future studies***

On a general level, we concur with the view that work and organisational psychology would benefit from descriptive studies on change alongside predictive studies (Kelloway & Francis, 2013), and encourage further research from different methodological approaches. A review on longitudinal predictive studies concluded that lagged effects of stressors on strain peaked at three years (Ford et al., 2014). In accordance with that, our results indicated that a two-year timeframe is useful for detecting steady change trends in subgroups of data.

Furthermore, the results of this study indicated that it could be useful to utilise the organisational justice literature in studies of work-related rumination. In particular, work-related rumination could be triggered by the experience of threat related to injustice especially when an individual is in a state of depleted psychological resources (Ford & Huang, 2014). Additionally, researchers could ask participants about the contents of their perseverative thoughts, for example, whether the thoughts relate to work tasks, organisation of work, co-workers, or supervisors. While the measure in our study was not solely limited to intrusive thoughts, we recommend that future research pays closer attention to the questionnaire items in measuring work-related rumination. In order to preserve conceptual clarity, it would be better if the measurement of the construct focused on intrusive thoughts and excluded affect, tension or lack of relaxation. Additionally, the degree to which exhaustion and work-related rumination are intertwined at the level of the individual deserves further attention in empirical studies and from a theoretical point of view.

More generally, understanding the role of leadership in long-term occupational well-being among employees is a worthwhile goal. However, to realise what happens between leaders and employees and how the influence of leadership comes about, their interactions could be also investigated in experience sampling designs. Thus far these types of studies have demonstrated that positive and negative work events have effects on employee mood, stress, and difficulty in detaching from work, with negative events showing stronger effects than positive (Bono et al., 2013; Miner, Glomb, & Hulin, 2005; Volmer, 2015; Wang et al., 2013).

### ***Practical implications***

Supervisors are in a central and influential position in employees' work-related thinking, particularly in times of stress and high job demands. Our study supports the view that high job demands, implying more unfinished work-related goals, and disrespectful supervisor behaviours specifically provoke work-related rumination. Our results further highlight that it is not only the amount of work that matters in this regard but cognitively and particularly emotionally burdening aspects of work make it difficult to switch off from work-related problems. We therefore emphasise that organisations and supervisors should be aware that high work demands continue to influence on employees even when they are not actively working, and in order to protect psychological recovery and long-term workability, take this into account in work plans. In addition, we can see value of supervisors clearly and explicitly encouraging their employees to leave stressful work issues aside during off-job time. Further, supervisors act as an example. Therefore they should restrain their own communication to employees during non-work time and show that is acceptable to allocate proper time for private life and recovery (Koch & Binnewies, 2015). Concerning supervisors, however, it is most important according to our results that they treat their employees fairly, equally, and with respect. In particular, they should refrain from abusive supervision behaviours. Further, supervisors should take an active role in solving conflicts among their employees. Thus, our findings concur with earlier studies showing that alongside work demands, particularly social conflicts instigate rumination and impair detachment from work (Bono et al., 2013; Volmer, 2015; Wang et al., 2013; Wendsche & Lohmann-Heischl, 2017). Moreover, from the viewpoint of employees themselves, high ruminators may benefit from making a plan on how to proceed with unfulfilled goals (Smit & Barber, 2016), cognitive-behavioural intervention (Querstret et al., 2016), or simple every-day strategies that helped participants in a recovery intervention to disengage from work (Hahn, Binnewies, Sonntag, & Mojza, 2011).

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