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The relationship between transformational leadership and effort-reward imbalance

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Abstract

Purpose – The purpose of this paper is to investigate the relationship between transformational leadership and effort-reward imbalance as well as the moderating role of overcommitment and subjective well-being. In particular, the study focuses on the transformational leadership component individualized consideration and its relationship with effort-reward imbalance.

Design/methodology/approach – Using linear hierarchical regression analyses, the authors tested four hypotheses on a broad sample of 229 German employees.

Findings – The results confirm the expected relationship between transformational leadership and effort-reward imbalance and that the strongest relationship exists with individualized consideration. However, there is no support for the hypothesized moderating effects.

Research limitations/implications – First, the recruitment of the sample via fora and periodicals may bias the results. Second, the dependent and the independent variables were assessed with the same method, thus facilitating a common method bias. Third, the study underlies a cross-sectional design which does not allow drawing conclusions on causality.

Practical implications – The findings provide implications for leaders by showing that the most effective leadership behaviours are those encompassed by the transformational leadership component individualized consideration when it comes to reducing negative health effects of adverse working conditions. Furthermore, the results suggest that overcommitment plays a major role for employees' effort-reward imbalance and should thus be addressed by specific training measures.

Originality/value – Researchers have devoted little attention to revealing how effort-reward imbalance can be avoided or reduced by leaders. The study attempts to fill this gap by exploring the relationship between effort-reward imbalance and transformational leadership.

Keywords Transformational leadership, Health, Leadership behaviour, Efford-reward imbalance, Overcommitment, Transformational leadership inventory (TLI)

Paper type Research paper

Introduction

A growing number of publications in popular science and the mass media have considered health implications of today's working conditions, such as increased stress, psychological disease, and burnout (e.g. Zimmermann, 2010). Germany in particular registers relatively high numbers of absences due to psychological strain and disease (Meyer *et al.*, 2013). In addition, more than 30 per cent of all pensions paid because of a reduction in work ability are caused by psychological disease (DRV, 2012). Given the expanding duration of working lives, these figures alert us to the need for analysis and action.

Certainly, superiors' leadership behaviour affects their subordinates' subjective perceptions of their own health (Skakon *et al.*, 2010), but leadership can also prevent psychological strain and disease (e.g. Kuoppala *et al.*, 2008). By demanding a certain level of performance, leaders shape the everyday working lives – and, thereby, the

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perceived stress levels – of their subordinates. Leaders may also give meaning to working tasks, provide support to subordinates who are in difficult or stressful situations, and recognize achievements thereby reducing psychological strain (Northouse, 2013).

A strong predictor of employee's health is the model of effort-reward imbalance which facilitates the assessment of negative effects of stressful work experiences on employee health (Siegrist, 1996). To balance these efforts, in addition to compensation, companies might offer rewards such as esteem, and/or security as well as career opportunities (Siegrist, 1996). However, leaders might also influence the reward component of employees' effort-reward imbalance by providing them with appreciation, career prospects as well as personal and work-related development opportunities (Avolio and Bass, 2002). These aspects are reflected by the so-called transformational leadership style. Transformational leadership was found to be positively related to several favourable individual and organizational outcomes such as follower creativity and employees' organizational commitment (e.g. Avolio *et al.*, 2004; Qu *et al.*, 2015). Although leadership styles such as transformational leadership might offer (intangible) rewards to employees, the relationship between a particular leadership style and the occurrence of effort-reward imbalance has not been analysed in depth yet. That is why it remains unclear how particular leadership behaviours may affect an effort-reward imbalance. It is reasonable to assume that employees can be reached and health problems resulting from leadership behaviour can be prevented most effectively by (components of) transformational leadership. This is because in the framework of transformational leadership, employees do not only play more active and individualized roles but are also treated with more appreciation and recognition (Nielsen *et al.*, 2008).

Against this background, our objective is to analyse the relationship between the perception of transformational leadership behaviour and effort-reward imbalance of employees. A pool of 229 individuals completed an online questionnaire on effort-reward imbalance and perceived leadership behaviours. With the results we tested four hypotheses that are being developed in the following sections. Testing was being carried out using linear hierarchical regression analyses. We will discuss the results and draw conclusions for research as well as for practice. Our findings add knowledge about the components of transformational leadership and their impact on a health-related construct, influential factors on effort-reward imbalance, and specific leadership behaviours that are beneficial for healthful working conditions.

Effort-reward imbalance and transformational leadership

The model of effort-reward imbalance

The model of effort-reward imbalance focuses on the relationship between stressful experiences at work and individual health risks (Siegrist, 1996). So it takes into account two sides of the same coin: the extrinsic efforts individuals make in response to high work demands (e.g. overtime work, work pressure, interruptions, and inconsistent demands) and the rewards they receive reciprocally in exchange for these efforts. According to Siegrist *et al.* (2004) employees put effort into their work as part of an implicit contract which is based on the norm of social reciprocity. In turn they expect rewards in the form of compensation, esteem, appreciation, recognition, reputation in the organization, promotion prospects, and/or job security (Siegrist, 1996). If this social reciprocity norm is violated, resulting in an imbalance between (high) effort and (low) reward, individuals experience recurring negative emotions and sustained stress reactions. This reaction derives from the fact that the work role is a core social role through which people seek the experience of

self-efficacy, self-esteem, and self-integration, which are essential for successful self-regulation. The constant lack of appropriate reward impairs successful self-regulation and the imbalance may lead to adverse physical and psychological health effects in the long run (Siegrist, 1996; Siegrist *et al.*, 2004).

Such an effort-reward imbalance tends to be maintained for a period of time which is relevant to health impairments only under certain conditions: poor alternatives on the labour market (e.g. because of a low level of skill or lack of mobility); an expected strategic advantage of persevering (e.g. expected career promotions at a later time); or overcommitment (Siegrist *et al.*, 2004). Overcommitment, as an integral part of the effort-reward imbalance model, is understood as an intrinsic effort, i.e. an individual behavioural motivation and coping pattern with a high need for approval and excessive involvement in work issues (Siegrist *et al.*, 2004). It describes the way people generally deal with stressful work experiences. An unrealistic perception of the efforts made and/or the rewards received is characteristic for overcommitted individuals: demands are being underestimated, the own coping resources are being overestimated (Siegrist, 1996). Furthermore, overcommitment lowers the individual's frustration tolerance to a violation of the reciprocity norm (Siegrist, 2012).

Several empirical studies have found evidence for an increased risk of health impairment when there is an effort-reward imbalance. Potential health outcomes are hypertension, heart attack, depression (e.g. Siegrist and Peter, 1994), musculoskeletal and gastrointestinal disorders, sleep disturbances (e.g. Peter *et al.*, 1998), and burnout (e.g. Bakker *et al.*, 2000). People who experience an effort-reward imbalance and are also overcommitted are particularly vulnerable to these impairments (Siegrist, 2012).

Transformational leadership

Leadership research has been conducted for several decades by many researchers in many disciplines, and the definition of leadership differs with the focus of interest. A definition that focuses on the individual actors, their behaviour, and relationships – our area of interest – is that of influence exerted by an individual on "a group of individuals to achieve a common goal" (Northouse, 2013, p. 5). Transformational leadership (Bass, 1985) has been subject to extensive research in the past decade. In this context, numerous positive outcomes of a transformational leadership style, like follower creativity (Qu *et al.*, 2015), organizational commitment (mediated by psychological empowerment) (Avolio *et al.*, 2004), organizational performance (Geyer and Steyrer, 1994), and (psychological) well-being (e.g. Arnold *et al.*, 2007; Zwingmann *et al.*, 2014), were identified. Transformational leadership particularly focuses the individuals involved in the leadership process. Its core idea is that a superior who leads in a visionary, inspiring, creative, mindful, and "morally uplifting" (Avolio and Bass, 2002, p. 8) way can motivate and stimulate employees to go beyond self-interest for the good of the group and achieve more than they ever thought was possible (Avolio and Bass, 2002).

Bass (1985) identifies four dimensions of transformational leadership (the four I's) which comprise three factors: idealized influence/inspirational motivation, intellectual stimulation, and individualized consideration (Dionne *et al.*, 2004). Some researchers label the second order factor, made up of idealized influence and inspirational motivation, "core transformational" because it characterizes the essence of a transformational leadership style. Idealized influence/inspirational motivation refers to the leader's providing an attractive and motivating vision for the future and defining challenging goals that energize the followers and let them identify themselves with the leader and the role model he or she represents. The leader acts consistent with the ethics,

principles, and values he/she proclaims (Avolio and Bass, 2002). Intellectual stimulation refers to a leader's ability to encourage his or her followers to make their own decisions and reconsider conventional behaviours and problem-solving processes in new, creative ways. Individualized consideration involves treating followers as individuals, not just as members of a group and not just as employees but as whole persons. An individually considerate leader acts as coach and mentor by delegating tasks to his or her followers, giving everyone the chance to learn, succeed, and fail without leaving them alone. Thus, individually considerate leaders offer their followers the chance to achieve ever-higher levels of performance in a way that considers individual needs (like encouragement, structure, or autonomy) and opportunities. Individualized consideration also entails listening attentively to followers' concerns and showing appreciation for their achievements (Bass, 1985; Avolio *et al.*, 1999; Avolio and Bass, 2002).

Considerations to the relationship of leadership and effort-reward imbalance: development of hypotheses

Although numerous approaches have been taken to investigations of transformational leadership's positive outcomes (e.g. Bass, 1985; Dionne *et al.*, 2004), its relationship with followers' perceived health has not been sufficiently analysed to date. Several arguments suggest at least an indirect link between the two, and the relationship between effort-reward imbalance and health outcomes (e.g. cardiovascular diseases, gastrointestinal disorders, musculoskeletal symptoms, burnout, depression, neck pain) has been validated by several studies (for an overview see Tsutsumi and Kawakami, 2004). However, our focus is on the relationship between transformational leadership behaviour and effort-reward imbalance, not on a direct link of leadership behaviour and health.

A transformational leader focuses on his or her followers as individuals, "is attentive to the needs and motives of followers and tries to help followers reach their fullest potential" (Northouse, 2013, p. 186). This way of acting as coach and mentor corresponds to the reward component in the model of effort-reward imbalance. Rewards in the work environment can be given in terms of money, esteem, and career opportunities (Siegrist *et al.*, 2004). Transformational leaders in particular provide employees with esteem (e.g. by listening attentively to their needs and showing appreciation for achievements), career opportunities, and personal and work-related development (e.g. by fostering their potential, teaching, and helping them to try their own approaches to problem solving). Thus, transformational leaders can strengthen the reward component, thereby weakening a (potential) effort-reward imbalance. From previous research we know that good leadership behaviour enhances employees' psychological well-being (e.g. Nielsen *et al.*, 2008) and reduces work-induced stress (Sosik and Godshalk, 2000). Since these constructs are closely related to effort-reward imbalance, this knowledge supports the assumption that transformational leadership behaviour is negatively related to effort-reward imbalance:

H1. There is a negative relationship between the perception of transformational leadership and employees' effort-reward imbalance.

Overcommitment, an intrinsic motivational and coping pattern and key component of the effort-reward imbalance model, determines how people generally respond to work demands. Its direct effect on effort-reward imbalance and associated health outcomes has been empirically validated (e.g. Siegrist, 1996; Joksimovic *et al.*, 2002). However, it may also moderate the relationship between transformational leadership behaviour and effort-reward imbalance. As stated above, overcommitted employees

underestimate the demands they are confronted with and overestimate their own coping resources. They therefore tend to unknowingly overexert themselves. In that case the transformational leadership style cannot develop its full potential regarding the decrease of an effort-reward imbalance and the relationship will be weaker:

H2. The relationship between the perception of transformational leadership and effort-reward imbalance is weaker when overcommitment is higher.

Subjective well-being, understood in this context as general life satisfaction in terms of a cognitive-judgmental process (Diener *et al.*, 1985) has been shown to have a positive effect on health and self-esteem (e.g. Arrindell *et al.*, 1999; Strine *et al.*, 2008). Strine *et al.* (2008) showed that people who reported a low sense of well-being were much more likely to be in poor physical condition, to suffer from mental distress, and to show depressive symptoms. The subjective comparison of the aspects of life that are critical for one's well-being to what is thought of as appropriate and desirable differs across individuals in terms of criteria (e.g. health or family), and in terms of how each aspect is weighted (Diener *et al.*, 1985; Arrindell *et al.*, 1999). Subjective well-being appears to have a degree of temporal stability and, as opposed to the affective dimensions of well-being, does not vary with singular positive or negative experiences (Pavot and Diener, 1993). Therefore, subjective well-being has a relatively stable influence such that the more dissatisfied one is with his or her life, the more likely one is, for example, to smoke, drink heavily, and be physically inactive (Strine *et al.*, 2008). Arrindell *et al.* (1999) show that subjective well-being is often accompanied by increased self-esteem. In short, subjective well-being can moderate the relationship between transformational leadership and effort-reward imbalance in that those who are generally satisfied with the individually relevant aspects of their lives (i.e. those who have a positive sense of subjective well-being) should not be as vulnerable to work demands and should be more easily positively influenced by a transformational leader's behaviour. Consequently, the relationship between transformational leader behaviour and effort-reward imbalance should be stronger:

H3. The relationship between the perception of transformational leadership and effort-reward imbalance is stronger when subjective well-being is higher.

Transformational leadership is not only to be looked at as a whole, but is usually divided into three components: core transformational (idealized influence/inspirational motivation), intellectual stimulation, and individualized consideration (e.g. Avolio *et al.*, 1999). Hence, one may argue that the effects of each of the three components on effort-reward imbalance differ in terms of their strength since each has its own focal point regarding the behaviour of a transformational leader. More precisely, the aspects of transformational leadership that correspond to the reward component of effort-reward imbalance, such as providing esteem, appreciation, and opportunities for career development, are mainly represented by the transformational leadership component individualized consideration (e.g. Avolio and Bass, 2002), which encompasses behaviours related to considering the individual needs and opportunities of each follower. Therefore, we assume that the relationship between effort-reward imbalance and individualized consideration should be stronger than its relationship with the other two components (core transformational and intellectual stimulation):

H4. The negative relationship between the perception of the three components of transformational leadership and employee's effort-reward imbalance is strongest for the component "individualized consideration".

The hypotheses are depicted in Figure 1.

According to our model, transformational leadership behaviour is negatively related to effort-reward imbalance (*H1*). This relationship is moderated by overcommitment and subjective well-being (*H2* and *H3*). Among the three components of transformational leadership, individualized consideration has the strongest relationship with effort-reward imbalance (*H4*). We focus on the relationship between transformational leadership behaviour and effort-reward imbalance, i.e. the constructs within the dotted box in Figure 1.

Method

Sample

An empirical study was carried out in autumn 2013. The extant literature provided distinct grounded knowledge on the fields of transformational leadership and effort-reward imbalance. From this knowledge we derived our hypotheses seeking verification/falsification by using a quantitative research design. Data were collected via an online questionnaire that was spread over several German social media channels and German periodicals, making it impossible to estimate a response rate or a non-response bias. Since an effort-reward imbalance can occur anywhere, we used a broad sample that was not age-, sex-, occupation-, or industry-specific. Our questionnaire was targeted to employees on any hierarchical level who had a superior. A total of 229 people participated, of whom 69.4 per cent were female. The participants averaged 38.4 years of age. The average participant in our survey experienced an effort-reward imbalance value of 1.33, whereas any value above 1.0 is considered critical (Siegrist *et al.*, 2004).

Measures

Effort-reward imbalance. We used ten items from Siegrist *et al.*'s (2009) German short version of the effort-reward imbalance questionnaire to measure the dependent variable effort-reward imbalance. Three of these items measure effort, and seven measure reward. Participants were asked to rate on a four-point Likert scale (1 = "strongly disagree" to 4 = "strongly agree") the extent to which they agreed with the statements presented.

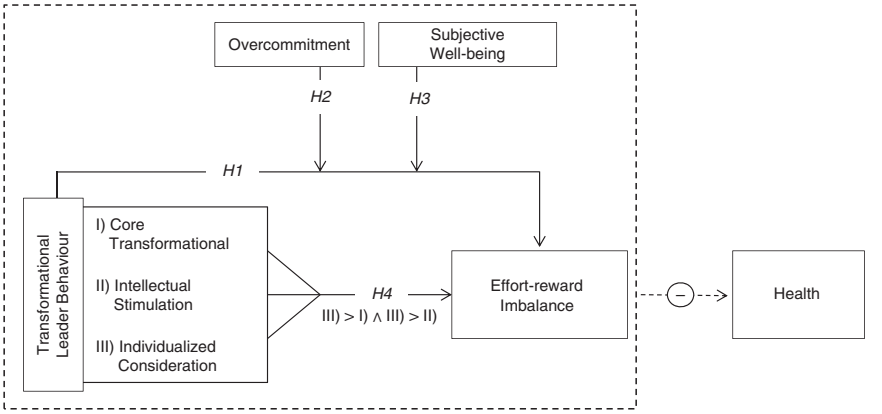

Figure 1. Transformational leadership, effort-reward imbalance, and health – model and hypotheses

The imbalance was constructed in accordance with general practice (Siegrist *et al.*, 2004) using the summed scores of the effort and reward scales. Then a ratio (effort/reward) was built for every participant, using a correction factor of (3/7) because of the different numbers of items in the nominator (effort scale: three items) and the denominator (reward scale: seven items). According to Siegrist *et al.* (2004), "a value close to zero indicates a favourable condition (relatively low effort, relatively high reward), whereas values beyond 1.0 indicate a high amount of effort spent that is not met by the rewards received or expected in turn" (p. 1487). Reliability was acceptable for the effort and the reward scale (Cronbach's $\alpha = 0.75$ and 0.79).

Transformational leadership. To measure the independent variable transformational leadership, similar to the proceeding of Gong *et al.* (2009), we asked the participants to assess their leaders' behaviour on the basis of 23 items that measure transformational leadership. For this purpose, we adopted the German version of the transformational leadership inventory (Podsakoff *et al.*, 1990; translation by Heinitz and Rowold, 2007). They rated the perceived leader behaviours on a five-point Likert scale (1 = "never" to 5 = "always"). These items constitute our three components: core transformational (inspirational motivation and idealized influence), intellectual stimulation, and individualized consideration (e.g. Dionne *et al.*, 2004; Heinitz and Rowold, 2007). We agree with MacKenzie *et al.* (2005) that these components are to be understood as the formative indicators of transformational leadership as the composite latent construct. The components were formed as mean scores of the respective item-ratings, and we also formed an overall transformational leadership score from the 23 relevant items (Podsakoff *et al.*, 1990). Reliabilities for the overall score and for the components varied between very good and excellent (Cronbach's $\alpha = 0.86$-0.95).

Overcommitment. Overcommitment was measured using a six-item scale that is contained in the effort-reward imbalance questionnaire (Siegrist *et al.*, 2009). Participants were asked to rate the six items on a four-point Likert scale (1 = "strongly disagree" to 4 = "strongly agree"). A mean score was formed for each participant, and reliability for the scale was very good (Cronbach's $\alpha = 0.81$).

Subjective well-being. Subjective well-being was measured using the satisfaction with life scale (SWLS) from Diener *et al.* (1985), translated into German by a German-speaking, native-English speaker. Participants were asked to rate five items on a five-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). A sum score for each participant was built in order to assess the participant's level of well-being, with 15 being the neutral point at which the respondent is as satisfied as dissatisfied. With a Cronbach's α of 0.89, reliability for the SWLS was very good.

Control variables. In order to adjust for possible confounding effects, we included control variables in our analyses that are likely to have an impact on the investigated relations. Sex and age were included since they are frequently employed as control variables in effort-reward imbalance research (e.g. Siegrist *et al.*, 2004). One reason for the frequent use of the variable sex is the knowledge that effort-reward imbalance is observed more often in contingent work settings with low wages, where women are over-represented (Tsutsumi and Kawakami, 2004). Thus, also wages play a role in assessing effort-reward imbalance, which is why we controlled for individual gross income per year. Siegrist *et al.* (2004) also included occupation and education in the analysis of effort-reward imbalance, so we included occupational status (1 = "Worker", 2 = "Employee", 3 = "Civil Servant") and executive position (0 = "No" and 1 = "Yes") in our analyses.

Data analysis

In order to test the hypotheses presented above, we performed two hierarchical multiple regression analyses using SPSS 22 for Windows. To make sure regression analyses were permitted, we checked on the variance inflation factors which did not exceed 1.5, meaning there is no multicollinearity to be suspected.

In order to test *H1-H3*, first, we included the control variables (sex, age, income, executive position, and occupational status) in model 1 and the independent variables (overall transformational leadership, overcommitment, and subjective well-being) in model 2 of the regression analysis with effort-reward imbalance as the dependent variable. Last, we included the interaction terms (overall transformational leadership × overcommitment, overall transformational leadership × subjective well-being) in model 3.

To test *H4*, we performed another hierarchical linear regression analysis, again with effort-reward imbalance as the dependent variable. In a first step, we included the control variables (sex, age, income, executive position, occupational status) in the regression analysis. In a second step, we included the three components of transformational leadership (core transformational, intellectual stimulation, individualized consideration) in model 2.

Results

The descriptive statistics such as means, standard deviations, and correlations of all variables included in the analyses are shown in Table I.

In order to test whether transformational leadership behaviour and effort-reward imbalance are negatively related (*H1*) and whether this relationship is moderated by overcommitment and subjective well-being (*H2* and *H3*) we performed a hierarchical multiple regression analysis. Table II presents the results.

Model 1 ($F = 2.05$; $p < 0.50$) explains 2 per cent of the variance. None of the control variables are statistically significant. The increase in explained variance in model 2 ($F = 16.60$; $p < 0.001$) accounts for 33 per cent primarily because of the medium to highly significant independent variables overall transformational leadership ($\beta = -0.29$; $p < 0.001$), overcommitment ($\beta = 0.34$; $p < 0.001$), and subjective well-being ($\beta = -0.17$; $p < 0.01$). Thus, *H1* can be confirmed. The variables in model 3 ($F = 13.35$; $p < 0.001$) add no further explanatory power which reflects the lack of significance of the additionally inserted interaction terms. Therefore, *H2* and *H3* cannot be confirmed.

H4 posits that effort-reward imbalance has the strongest negative relationship with individualized consideration. This proposition was tested with another hierarchical multiple regression analysis. Table III shows the results.

Model 1 ($F = 2.05$; $p < 0.10$) again has an explanatory power of 2 per cent of the variance. The only statistically significant variable is age ($\beta = 0.14$; $p < 0.05$), but this effect disappears with the inclusion of the independent variables in model 2 ($F = 9.40$; $p < 0.001$). The variables in model 2 explain 23 per cent of the variance, but the strongest effect, and concurrently the only significant regression coefficient is that of individualized consideration ($\beta = -0.38$; $p < 0.001$). Therefore, *H4* can be confirmed.

Discussion and conclusions

Limitations

Our study has four primary limitations that should be considered in light of our results. First, our sample raises the question of the generalizability of our findings. We recruited our participants via online fora, social networks, and periodicals, which may have resulted in a bias towards internet-affine individuals who tend to be rather young.

Table I.
Means, standard deviations, ranges, and correlations

Variable	*M*	SD	Range	1	2	3	4	5	6	7	8	9	10	11
1. Sex	0.31	0.46	–											
2. Age	38.38	10.33	20.00-65.00	−0.07										
3. Income	2.64	1.18	–	0.39**	0.02									
4. Executive position	0.28	0.45	–	0.04	0.10	0.39**								
5. Occupational status	2.20	0.62	–	0.09	0.10	0.10	0.10							
6. Effort-reward imbalance	1.33	0.56	0.37-4.00	−0.10	0.15*	−0.05	0.09	−0.05						
7. Overall transformational leadership	2.90	0.85	1.09-5.00	0.06	−0.14*	0.06	0.06	−0.06	−0.41**					
8. Core transformational	2.90	0.86	1.00-5.00	0.04	−0.13	0.05	0.07	−0.08	−0.33**	0.97**				
9. Intellectual stimulation	2.50	1.00	1.00-5.00	0.15*	−0.31**	0.08	0.08	−0.02	−0.38**	0.82**	0.75**			
10. Individualized consideration	3.13	1.16	1.00-5.00	0.03	−0.03	0.08	−0.04	−0.01	−0.46**	0.79**	0.64**	0.58**		
11. Overcommitment	2.49	0.66	0.83-4.00	−0.07	−0.05	0.08	0.11	0.04	0.47**	−0.21**	−0.17*	−0.15*	−0.26**	
12. Subjective well-being[a]	18.52	4.04	5.00-25.00	0.12	−0.19**	0.20**	0.06	0.05	−0.41**	0.27**	0.23**	0.26**	0.27**	−0.40

Notes: $n = 229$. "Range" refers to the minimum and maximum values reached by the respective variable. [a]We adjusted the scale from an originally seven-point to a five-point Likert scale for reasons of comparability and consistency with the other variables. Significance level: *$p < 0.05$; **$p < 0.01$

Variables	Model 1	Model 2	Model 3
Control variables			
Sex	−0.06	−0.01	0.00
Age	0.14	0.09	0.09
Income	−0.07	−0.06	−0.05
Executive position	0.12	0.10**	0.11
Occupational status	−0.06	−0.09	−0.09
Independent variables			
Overall transformational leadership	(*H1*)	−0.29****	−0.30****
Overcommitment		0.34****	0.33****
Subjective well-being		−0.17***	−0.16**
Interactions			
Overall transformational leadership×overcommitment	(*H2*)		−0.01
Overall transformational leadership×subjective well-being	(*H3*)		0.06
F	2.05*	16.60****	13.35****
Adjusted R^2	0.02	0.35	0.35
ΔR^2		0.33	0.00

Notes: $n = 229$. Dependent variable: effort-reward imbalance. Depicted are the standardized regression coefficients (β). Significance level: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$; ****$p < 0.001$

Table II.
Results of the regression analysis to test *H1-H3*

Variables	Model 1	Model 2
Control variables		
Sex	−0.06	−0.05
Age	0.14**	0.09
Income	−0.07	−0.03
Executive position	0.12	0.10
Occupational status	−0.06	−0.07
Independent variables		
Core transformational		0.03
Intellectual stimulation		−0.16
Individualized consideration (*H4*)		−0.38****
F	2.05*	9.40****
Adjusted R^2	0.02	0.23
ΔR^2		0.21

Notes: $n = 229$. Dependent variable: effort-reward imbalance. Depicted are the standardized regression coefficients (β). Significance level: *$p < 0.10$; **$p < 0.05$; ****$p < 0.001$

Table III.
Results of the regression analysis to test *H4*

However, the average age of 38.4 years was not alarmingly low. In addition, women were over-represented in our sample (69.4 per cent), but since we controlled for sex, which had only a weak influence, this issue does not, in all likelihood, play a major role. A second limitation is that our sample derives from a German population, so our data may have a national bias that results from country-specific influences, such as national culture. Third, we used subjective ratings by subordinates to assess leadership behaviour, which some may consider limiting, although Hater and Bass (1988) find subordinates' appraisal of transformational leaders to distinguish fairly good "top performing managers (identified as such through other sources) from ordinary

managers" (p. 695). However, we assessed the dependent variable, effort-reward imbalance, asking the same respondents for their subjective assessment. This may result in a common method bias. Fourth, our study faces the common limitations of cross-sectionally designed quantitative empirical research, which make it problematic to demonstrate causality between the investigated constructs (e.g. Gurt *et al.*, 2011). Statements on causality are, strictly speaking, only permissible within a longitudinal research design. And even if less plausible, it is at least possible that the causalities operate the other way around in our study such that an effort-reward imbalance affects how a leader behaves. Of course, such an effect on behaviour is likely only if the leader notices the imbalance and changes his or her behaviour in response.

Discussion and future research

Our study investigated whether the perception of a transformational leadership style is related to an effort-reward imbalance and, if so, whether this relationship is moderated by the individual employee's overcommitment and subjective well-being. We also dealt with the question which of the components of transformational leadership has the strongest relationship with effort-reward imbalance. In order to answer these questions we conducted an empirical study.

To test our hypotheses we performed linear hierarchical regression analyses, which provided satisfactory adjusted coefficients of determination: the control variables had little explanatory power, while the independent variables explained the greatest part of the variance (35 per cent, respectively, 23 per cent; see Tables II and III). Our finding that older people have a (weak) tendency towards a lower effort-reward imbalance (see Table III) is consistent with Siegrist *et al.* (2004), who find lower effort and higher reward for older participants in multiple samples, which result in lower levels of effort-reward imbalance. Siegrist *et al.* (2004) also find that people with a higher educational level experience relatively higher effort and higher rewards. However, according to our results, people in executive positions with managerial responsibility, which suggests a comparatively high level of education, experience relatively higher levels of effort-reward imbalance (see Table II).

As to the nature of the relationships, i.e. positive or negative, between the independent variables (overall transformational leadership, subjective well-being, and overcommitment) and effort-reward imbalance, they are all found as expected. The finding that the severity of effort-reward imbalance decreases with the rising intensity of the demonstrated transformational leadership style (see Table II) points in the direction suggested by Siegrist (2012), who proposed that "the improvement of leadership skills among supervisors and superiors" (p. 18) may be a possible intervention measure on the interpersonal level. However, this proposal had not yet been proven. Siegrist (2012) also states that the leadership behaviour that is assumedly able to prevent stress and reduce an effort-reward imbalance should include "the awareness of an important role of esteem, recognition and appropriate feedback" (p. 18). This supposition is in line with our identification of individualized consideration as the transformational leadership component with the most intense negative relationship with effort-reward imbalance (see Table III). Our study focuses on the relationship between transformational leadership and effort-reward imbalance, so it is left to future research to investigate a relationship between (transformational) leadership and health, either mediated by effort-reward imbalance or linked in a direct way. At this time, these relationships can only be assumed at best.

Another finding of our study is that the greater an employee's subjective well-being, the weaker is the effort-reward imbalance (see Table II). This result differs from the findings of De Jonge *et al.* (2000), who find a negative effect of effort-reward imbalance on employee well-being. However, since effort-reward imbalance is a strong predictor of employee health (e.g. Siegrist *et al.*, 2004), our findings are consistent with the work of Arrindell *et al.* (1999) and Strine *et al.* (2008), who show a positive effect of subjective well-being on health and self-esteem. In order to resolve these diverging results, future studies should adopt a longitudinal research design in order to draw more confident conclusions regarding the direction of causality.

In contrast to the independent variables, the interaction terms did not show the suspected effects, as none was significant or of more than minimal strength. Therefore, we are not able to show a moderating effect of overcommitment or subjective well-being on the relationship between transformational leadership and effort-reward imbalance. However, we found direct relationships of the two variables with effort-reward imbalance (see Table II). Overcommitment has a moderately positive relationship with effort-reward imbalance, which is plausible because overcommitted individuals frequently fail to assess their efforts and rewards correctly (Siegrist, 1996). In contrast, subjective well-being has a comparatively weak but negative direct relationship with effort-reward imbalance. This result is in need of theoretical and empirical explanation because it remains unclear how a general satisfaction with life can positively affect rewards and/or negatively affect effort. All in all, these findings call for future studies to analyse the modes of action that underlie the finding on subjective well-being as well as the effects of other feasible moderators, including circumstance-related factors.

As a by-product from the analyses regarding our hypotheses, we gained insights concerning the construct of overcommitment, finding a correlation with leadership behaviour (see Table I). This finding expands the literature, which presents overcommitment as an intrinsic effort characterized by specific motivational and coping patterns (Siegrist *et al.*, 2004). Our results indicate that overcommitment may also be influenced extrinsically by leadership behaviour, i.e. individuals whose superiors lead in a transformational way tend to be less overcommitted. Future research could validate these findings and investigate other possible influential factors on the construct of overcommitment. Furthermore, our study makes a case for a relationship between overcommitment and subjective well-being (see Table I). Either overcommitted individuals experience less life satisfaction or more satisfied people tend to be less overcommitted to work. The answer to the question of causality is left to future research, preferably through a longitudinal research design.

Like overcommitment draws on the individual perceptions of efforts and rewards, equity theory (Adams, 1963) has taught us what the perception of effort and rewards in relation to comparison others as unequal can do to individuals and/or organizations. The effects range from dissatisfaction, lowered productivity and absenteeism to psychological strain (Adams, 1963; Tepper, 2001). Given such a social comparison (e.g. with a co-worker) results in perceived inequity of efforts and rewards, the individual may experience distress. In this case, the distress is not affected by the individual's leader. Hence, leaders' capabilities of exerting influence on effort-reward imbalance may underlie restrictions associated with individual perceptions and evaluation processes.

Having identified those leadership behaviours that are entailed in the transformational leadership component individualized consideration to be negatively related to effort-reward imbalance, our results raise further questions. First: how frequently are these leadership behaviours being adopted? Research on the question of the prevalence of an individually considerate leadership style in Germany and in other countries is of interest. The results could be used for international comparisons and the analysis of reasons for any differences in the prevalence of specific leadership styles in order to identify whether differences regarding leadership behaviour may be due to cultural and/or institutional context factors. Such an analysis appears to be especially promising since international differences in the extent of effort-reward imbalance are already documented (Hasselhorn *et al.*, 2004). Second: on what level does the individually considerate leader affect an employee's perception of effort and reward? Is it via a cognitive route by evaluating efforts made and rewards received, or via an emotional, possibly subconscious route by making the subordinate feel comfortable and balanced? Qualitative research in the form of personal interviews could provide insights to this topic. Further, Avolio *et al.* (2004) detect that structural distance between leader and follower influences the effectiveness of transformational leadership. Therefore, taking differences in structural distance into account in future studies may provide further valuable insights into the relationship between transformational leadership and effort-reward imbalance.

Conclusions

The results of our study contribute to the scientific literature and also provide knowledge relevant to practice. First, we add knowledge to the field of research on transformational leadership (e.g. Podsakoff *et al.*, 1996; Dionne *et al.*, 2004), finding that transformational leadership is negatively related to effort-reward imbalance and, thus, decreases the risk of adverse health effects on employees in the long run. Our results also support the branch of research that focuses on the exploration of the components of transformational leadership (e.g. Avolio *et al.*, 1999; Nielsen *et al.*, 2008) since we find fundamental differences between the components. When looked at separately, the only component that is significantly related to effort-reward imbalance in a negative way is individualized consideration. So it can be assumed that individualized consideration has a displacement effect on the other components, core transformational and intellectual stimulation. The other components' modes of action, such as articulating a vision, motivating with challenging goals, and delegating decisions and responsibility seem to be ineffective when it comes to unburdening employees from adverse working conditions and subsequent health impairments. This finding has practical implications since it shows that the most important leadership behaviours in reducing or preventing an effort-reward imbalance are listening to subordinates' concerns, appreciation and recognition of achievements, and encouragement of personal and career development.

Second, we make a substantial contribution to the research on effort-reward imbalance. We found that people who have transformational leaders are less likely to overcommit to a work situation, so transformational leadership behaviour can develop its positive impact via multiple routes. We also contribute to the field of effort-reward imbalance by identifying leadership behaviour as a possible intervention on the interpersonal level. This relationship has been assumed but had not been investigated (Siegrist, 2012). Moreover, we identify two factors that are related to the severity of an effort-reward imbalance that have been neglected by prior research: our assumed

moderators, subjective well-being and overcommitment, showed a direct relationship with effort-reward imbalance. This relationship is negative for subjective well-being, while positive for overcommitment.

Regarding the practical implications of these findings, we agree with the advice from Aust *et al.* (1997) to address overcommitment directly in training within the scope of personnel development. Through such training employees can learn how to deal with stressful situations and how to utilize techniques for relaxation and coping, thereby reducing their level of overcommitment (Aust *et al.*, 1997). Supporting their own well-being is part of the employees' responsibility, as developing satisfying aspects in one's life may reduce the effect of an influence factor of effort-reward imbalance. These implications are substantially relevant because effort-reward imbalance is a strong predictor of employee health (e.g. Siegrist and Peter, 1994; Bakker *et al.*, 2000; Siegrist *et al.*, 2004). Employee health affects organizational costs through absenteeism rates, expenses for medical care, and low employee productivity (Pelletier, 2001; Goetzel and Ozminkowski, 2008) as well as economic costs through expenses in the scope of health and social welfare systems and reducing the economic productivity of labour or impairing its availability (Scarborough *et al.*, 2011; DRV, 2012). Considering the longer working hours and extending work lives of today's employees, a healthy, employable, and productive workforce is essential for a successful organization, a healthy economy, and a vigorous society.

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