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Is transformational leadership healthy for employees? A multilevel analysis in 16 nations**

This study examines the potential health promoting and hampering effects of transformational, contingent reward and laissez-faire leadership across 16 countries with a multi-source dataset comprising 93,576 subordinates in 11,177 teams of a large international company. We analyze how leadership climate strength, defined as the shared perceptions of employees concerning their supervisor's leadership behavior, affects individual employees' health and if leaders who are both transformational and transactional have more healthy employees (augmentation effect). In addition, we investigate how national power distance moderates these relationships. The results of multi-level analysis provide strong support for the health promoting effect of transformational leadership ($r = .16$ to $r = .50$), contingent reward ($r = .14$ to $r = .48$) and the health hampering effect of laissez-faire leadership ($r = -.15$ to $r = -.43$) within the analyzed 16 nations. Having a strong transformational leadership climate is also associated with better perceived health in eight countries. Finally, the augmentation effect was significant in six countries and we also found, as expected, that a high power distance strengthens the health promoting effects of transformational leadership. Overall, this study indicates that having a shared vision as well as clear goals, roles and rewards at work is important for promoting employees' health worldwide.

Key words: transformational leadership, contingent reward, augmentation effect, international, workplace health, well-being
(JEL: I10, I14, I30, I31, L20, M16)

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In Europe, between 50% and 60% of all lost working days have some link with work-related stress (EU-OSHA, 2012). Thus, it is important to investigate how stress at work is aroused, how it can be prevented and what factors help employees to cope successfully with stressors (e.g., time pressure) that are often an inevitable part of modern work. Prior research on work-related stress has identified many relevant factors (e.g., work design, social support at work; for recent reviews see Humphrey, Nahrgang, & Morgeson, 2007; Richter & Wegge, 2011). In our study, we focus on the role of leadership in this process as recent research suggests an important impact of leadership behavior on various indicators of employee well-being including sickness absences, general health, and satisfaction (Kuoppala, Lamminpaa, Liira, & Vainio, 2008). Further, there is accumulating evidence that the health of employees can be promoted (harmed) through *specific* leader behaviors (e.g., Haslam, Reicher, & Platow, 2011; Skakon, Nielsen, Borg, & Guzman, 2010). Although leadership has attracted rising attention as a potential predictor of subordinates' health, there is comparatively little research analyzing if the so far identified positive (negative) relationships between specific leadership behaviors and employees' health are valid *across* national borders. Exploring this issue is important as many (international) companies seek to align and harmonize their leadership systems and styles across countries in which they operate (Brodbeck, 2008; Gong, 2013). Our study seeks to shed light on this issue. In doing so, we focus on the transformational-transactional leadership approach as the current state of research suggests that mainly transformational and in part also contingent reward leadership (one element of transactional leadership, cf. below) is positively associated with employee health and well-being (Skakon et al., 2010).

Leadership styles and subordinates health in different nations

In recent years, there has been an explosion in interest in the association between leadership style and employee health and wellbeing, and therefore health-promoting leadership has become a highly topical and controversial discussed issue. Two systematic reviews (Nyberg, Bernin, & Theorell, 2005; Skakon, Nielsen, Borg, & Guzman, 2010) concluded, that in particular transformational and transactional leadership styles show the highest relations to employees' health and well-being outcomes.

The basic behavior of transformational leaders is to formulate a vision to followers to focus on higher order intrinsic needs and organizational goals. According to Bass (1997), the four dimensions of transformational leadership are charisma or idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Charisma, or idealized influence, is the degree to which the leader acts as a role model in ways that are consistent with the articulated vision and that cause followers to identify with the leader. Through the behavior of inspirational motivation, leaders challenge and inspire followers with an appealing vision, high standards and optimism about future goal attainment. Moreover, transformational leaders challenge followers' assumption, encourage creativity and trigger their intellectual work.

Finally, individualized consideration describes the extent to which the leader considers subordinates' individual needs and concerns.

In contrast, transactional leadership behavior focuses on clear roles and the proper exchange of resources at work and comprises three dimensions: contingent reward, management by exception-active, and management by exception-passive. Due to its clear relation to goal setting and rewards, contingent reward leadership was the only transactional leadership behavior that was originally assumed to be effective (Avolio, 1994). Lowe, Kroeck and Sivasubramaniam (1996) confirmed in their meta-analysis the validity of contingent reward leadership and therefore, we focus on this dimension of transactional leadership (see also DeRue, Nahrgang, Wellman, & Humphrey, 2011; Judge & Piccolo, 2004). Contingent reward is defined as the extent to which the leader clarifies expectations and sets up constructive transactions for meeting these expectations.

Finally, a predominant *health-hampering* leadership behavior is laissez-faire leadership, which subsumes the avoidance or absence of leadership. Laissez-faire leaders avoid making decisions, are inhibited when exercising their leadership or are often absent when needed. Presumably, this leadership behavior promotes the development of conflicts at work that is typically associated with low well-being and health (cf. below). Accordingly, we treat laissez-faire leadership separately from transformational and contingent reward leadership (Bass, 1997).

In addition to several empirical findings confirming the health-promoting effects of transformational leadership (see also Nyberg et al., 2005; Skakon et al., 2010), there are some well-founded arguments why transformational leadership should have a strong impact on subordinates' health and well-being. First, the core characteristics of transformational leadership such as support, empowerment and a high-quality relationship between leaders and their employees might prevent the development of stress at work. Having support from supervisors leads to higher well-being (e.g., Gilbreath & Benson, 2004), less burnout (e.g., Mazur & Lynch, 1989), less stress (e.g., Moyle, 1998) and less psychosomatic complaints (e.g., Elfering, Semmer, Schade, Grund, & Boos, 2002). A few studies analyzed the differentiated effects of transformational leadership dimensions and confirmed that especially individualized consideration, which is the dimension that is closely related to emotional support, is negatively related to strain (Franke & Felfe, 2011a; Rowold & Schlotz, 2009).

Second, transformational leaders influence followers' self-concept by enhancing self-efficacy, confidence, and self-esteem (Shamir, House, & Arthur, 1993) which are core aspects of personal resources (Richter & Wegge, 2011). Research based on the Job-Demands Resources Model (Bakker & Demerouti, 2007) has found that personal resources can reduce demands, correlate positively with employees' health and buffer the impact of job demands on job strain, including burnout. Thus, it can be expected that transformational leaders promote subordinates' personal resources and this helps employees in coping more successfully with job demands (e.g., work overload, emotional and physical demands). In addition, Franke and Felfe (2011a) proposed that in particular the transformational leadership dimensions individualized consideration and idealized influence (attributed) affect the self-concept of subordinates by fostering

perceptions of confidence and trust and by providing appreciation and empathy, leading to decreased followers' perceived strain.

Finally, transformational leaders develop trustful and high-quality relationships with their subordinates based on their main components (e.g., empathy, appreciation). Thus, in line with previous research, a positive leader employee relationship characterized by trust, recognition and confidence is a key determinant of individual health and well-being (e.g., Tepper, 2000). In sum, empirical findings support the overall health-enhancing effect of transformational leadership and in particular, the dimensions individualized consideration and idealized influence (attributed) are possibly relevant factors in this health-promoting process.

In contrast, if leaders show no concern for subordinates and are not available for followers, conflicts at work can easily develop. Thus, in line with the findings of the recent meta-analysis regarding negative effects of destructive forms of leadership (Schyns & Schilling, 2013), it can be expected that laissez faire leadership often leads to conflicts that, in turn, hamper employees' health. In addition, several studies suggest that laissez-faire leadership may cause particular workplace stressors such as role conflicts, role ambiguity and disappointments by not meeting the legitimate expectations of their subordinates which leads to increased individual stress reactions and strains (cf. Kelloway, Sivanathan, Francis, & Barling, 2005). More specifically, a few studies indicate that the lack of expected presence, involvement, feedback and rewards of laissez-faire leaders leads to increasing role conflicts, and furthermore, the lack of employees' representatives to set goals, responsibilities and decisions causes role ambiguity (Skogstad, Einarsen, Torsheim, Aasland, & Hetland, 2007). At the team level, the absence of leadership also creates frustration and stress within the workgroup which results in interpersonal conflicts among coworkers. Thus, when workplace stressors and interpersonal problems are not dealt with they may cause bullying, high levels of interpersonal stressors and psychological distress (Skogstad et al., 2007). In sum, we assume that laissez-faire leadership is not a type of zero-leadership but a type of destructive leadership style that shows negative relationships to subordinates' well-being and physical health.

Whereas such relationships between leadership and health are analyzed more often in recent years, to the best of our knowledge, no previous studies have *systematically* investigated if these effects are generalizable across different nations. Of course, we know from prior research that the *performance* enhancing effects of transformational leadership can be found in many countries (Judge & Picolo, 2004; van Knippenberg & Sitkin, 2013). In general, several researchers found commonalities and differences in leadership across countries and emphasized that both universal and country-specific perspectives are relevant to transformational leadership and related outcomes (Dickson, Hanges, & Lord, 2001). The pioneering Global Leadership and Organizational Behavioral Effectiveness Program (GLOBE; House, Hanges, Javidan, Dorfman, & Gupta, 2004) proposed that some transformational leadership characteristics (e.g., being encouraging, motivating, building confidence) appear to be universally endorsed across 61 cultures. Additional research confirmed positive relations in different national (e.g., Korea, China, India) contexts concerning transformational leadership and subordinates performance (Wang, Oh, Courtright, & Colbert, 2011). In their current

meta-analysis, Leong and Fischer (2011) summarized that transformational, transactional and laissez-faire leadership (assessed with the MLQ) might be seen as theoretically relatively universal but there were also significant and systematic differences between the 18 analyzed countries in the reported levels of transformational leadership. Thus, the effectiveness of transformational leadership is mainly generable across nations but depends in its magnitude also on socio-economic and cultural factors.

In sum, the performance enhancing effectiveness of transformational leadership seems to be robust and can be generalized across nations. Nevertheless, the observed leadership levels and also the magnitude of effects depend on socio-economic and cultural factors. Recent studies suggest that the effects of socio-cultural factors on leadership outcomes are almost ten times larger than the effects of specific business factors (Brodbeck, Frese, & Javidan, 2002). Thus, management researchers typically recommend international firms to develop a world wide application of universal effective leadership characteristics that should be adapted to local socio-cultural characteristics (Brodbeck, 2008). Based on previous studies indicating a positive relationship between transformational leadership and subordinates well-being and physical health, we therefore expect finding also systematic relationships (of varying magnitude due to specific socio-cultural characteristics, cf. below) between the leadership styles assessed with the MLQ and employees health in the 16 nations under investigation. Taken together, based on the available evidence we derived the following hypotheses:

- Hypothesis 1: Transformational leadership will have positive relationships with (a) follower well-being and (b) follower physical health.
- Hypothesis 2: Contingent reward will have positive relationships with (a) follower well-being and (b) follower physical health.
- Hypothesis 3: Laissez-faire leadership will have negative relationships with (a) follower well-being and (b) follower physical health.

Power distance as a moderator of the relation between leadership and health

Leadership has been traditionally defined in masculine and dominance terms (Yukl, 2002) and thus, individuals showing masculine, dominance and status traits are more likely to emerge as leaders (Lord, De Vader, & Alliger, 1986). Considering leadership as a process of influencing and directing followers, culture dimensions focusing on dominance, status and masculinity are theoretically and empirically strong related to transformational leadership behavior (Leong & Fischer, 2011). A well-established cultural dimension in almost all existing cultural frameworks (e.g., Hofstede, 1980; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Schwartz, 1994) that includes the elements of dominance and status is the cultural dimension of power distance.

Power distance is defined as the extent to which a society accepts the fact that power in organizations is distributed unequally (Hofstede, 1980). In cultures with large differences in power between individuals organizations will typically have more layers and the chain of command is felt to be more important (Javidan & House, 2001). Recent research further suggests that high power distance cultures prefer models of management in which the initiatives are given by the leaders and thus, receiving encouragement and recognition from the leader is more valued and effective in high

power distance cultures (Ergeneli, Gohar, & Temirbekova, 2007; Dickson, Den Hartog, & Mitchelson, 2003).

Moreover, support from higher levels, i.e. leaders, is emphasized more in high power distance countries (Shane, Venkataraman, & MacMillan, 1995). In addition, power distance also plays a role in employees' willingness to *accept* supervisory direction and on their emphasis on gaining support from those in positions of authority (Bu, Craig, & Peng, 2001). Accordingly, in high power distance cultures in particular transformational leadership behaviors should be stronger valued by followers and, if present, could also enhance the positive effect on subordinates' health outcomes. Thus, extending the arguments for the universality of health-promoting transformational leadership effects across nations, we argue that the *strength* of transformational leadership effects on well-being and physical health is moderated by national power distance.

Hypothesis 4: Power distance moderates the relation between transformational leadership and followers' a) well-being and b) physical health such that the relationship will be stronger under a high power distance culture than under a low power distance culture.

Augmentation effect of transformational leadership on subordinates health

One of the most controversially discussed assumptions of the transformational-transactional leadership theory of Bass (1997) is that transformational leadership has an augmentation effect over and beyond transactional leadership. Bass proposed that transformational leadership adds to the effectiveness of transactional leadership. Several studies have confirmed the augmentation effect of transformational leadership (Judge & Picolo, 2004). However, the majority of samples were from the United States (e.g., Dubinsky, Yammarino, Jolson, & Spangler, 1995). Few studies investigated samples from Germany (Rowold & Heinitz, 2007), Singapore (Koh, Steers, & Terborg, 1995) and Spain (Molero, Cuadrado, Navas, & Morales, 2007). To our knowledge, only one study analyzed the augmentation effect of transformational leadership in a cross-national context using samples from India and US (Waldman & Bass, 1985). Accordingly, the generalizability of the augmentation effect is rather unclear. Moreover, most of these studies focused on performance as the main dependent variable (e.g., Dubinsky, Yammarino, Jolson, & Spangler, 1995) or employees' satisfaction, commitment and organizational citizenship behavior (e.g., Koh, Steers, & Terborg, 1995). In conclusion, it remains to be seen if transformational leadership also has the potential to augment effects on subordinates' health and well-being.

Nevertheless, there are some well-founded arguments why transformational leadership should have a stronger impact on subordinates' health and well-being than contingent reward. First, as mentioned above, the core mechanism of transformational leadership such as enhancing the self-concept of subordinates, providing support and developing high-quality relationship in particular through the dimensions individualized consideration and idealized influence (attributed) might prevent the development of stress at work. In contrast, contingent reward with its focus on goal setting, performance and proper reward systems should primarily enhance work-related outcomes like effectiveness, performance or satisfaction. Thus, we propose that a less

contingent reward leadership should lead to decreased well-being and health but only transformational leadership with its emphasis on support, empowerment and a high-quality relationship should yield *enhanced* subordinates health and well-being.

Second, research related to the impact of various aspects of work design is also relevant here. Whereas transformational leadership is rather associated with socio-emotional support, feedback and experienced meaningfulness at work, contingent reward leadership is associated with orientation and control at work, aspects that are linked to motivational work characteristics. As Humphrey, Nahrgang and Morgeson (2007) found in their meta-analysis that social characteristics explained a considerable amount of variance in well-being (e.g., stress, burnout) beyond motivational work characteristics, it can again be expected that transformational leadership should augment the effects of contingent reward leadership. In sum, transformational leadership with its multiple health promoting facets should have higher relations and explain additional variance in subordinates' health and well-being than contingent reward. Thus, we further hypothesize:

Hypothesis 5: Transformational leadership will positively augment the relationship between contingent reward and (a) follower well-being and (b) follower physical health.

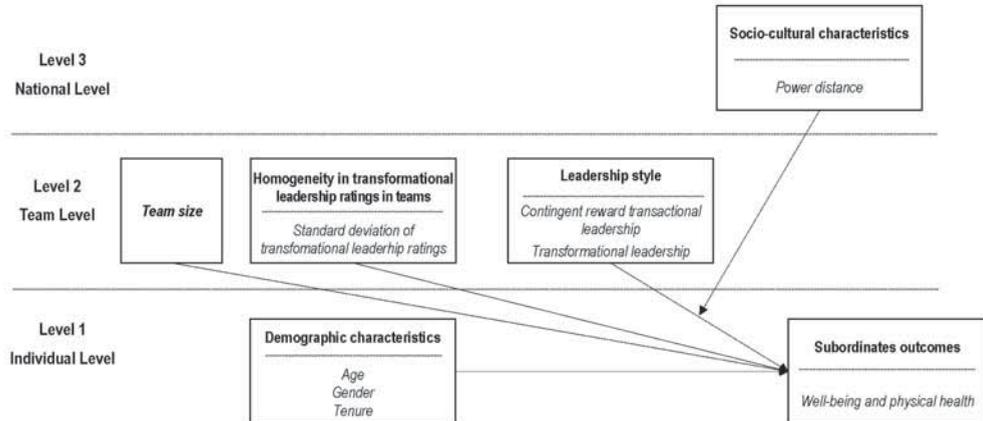
Levels of analysis and transformational leadership climate in teams

Although transformational leadership has been studied extensively, the appropriate level of analysis and important contextual factors are still unclear. Wang, Oh, Courtright and Colbert (2011) therefore suggested that future research should examine effects of transformational leadership across levels of analysis using hierarchically nested data. As individual health is *no* team-level construct, we predict and test related effects at the individual level of analysis. This is also warranted to account for the nested nature of the data (e.g., several employees share *one* leader). In a similar vein, contextual factors at the team level such as team climates should be taken into account when analyzing potential effects of leadership in teams. Moreover, models of group processes indicate that health impairment processes develop when a lack of consensus about issues of relevance to the group exist (Bliese & Halverson, 1998). Thus, low perceived consensus regarding leadership can exhaust employees' mental and physical resources. According to social influence theory (Festinger, 1950) and models of group socialization (Moreland & Levine, 1982), groups characterized by low levels of consensus lack a shared sense of social reality and this leads to increasingly heightened levels of conflicts and stress, negative health and performance outcomes. With respect to transformational leadership, De Jong and Bruch (2013) and Walter and Bruch (2010) recently showed that climates of transformational leadership do exist in the sense of more or less *shared* leadership perceptions of employees. Thus, it is not only the average team level of transformational leadership (i.e., the mean perceptions among employees) but also the level of homogeneity (i.e., the variance in perceptions) which is important for understanding the effect of leadership on organizational outcomes. In line with current research reporting positive relations between lack of group consensus and health impairment processes as well as positive relationships between

the homogeneity in transformational leadership and organizational outcomes, we finally propose:

Hypothesis 6: The standard deviation of transformational leadership within teams will have negative relationships with (a) follower well-being and (b) follower physical health.

Figure 1: Research model



In summary, to account for the nested nature of the data (e.g., several employees share *one* leader) and possible context factors at the team level such as team size and the transformational leadership climate, we used a multi-level approach. Moreover, we also controlled for age, gender and tenure at the individual level of analysis because many prior studies found differences in health that are related to these variables (e.g., Richter & Wegge, 2011). Figure 1 presents our overall research model.

Method

Sample

The data were collected in a large international organization. Employees of this organization had very similar jobs and tasks in the 16 different countries in Europe (Austria, Croatia, Czech Republic, France, Germany, Great Britain, Hungary, Italy, Netherlands, Slovakia, Spain, Switzerland), South America (Brazil, Mexico), Africa (South Africa) and Asia (Malaysia). The participants were subordinates (no leaders) who evaluated their direct supervisor as part of an annually employee survey. To ensure consistency across our samples, we selected solely subordinates who evaluate their *direct* supervisor and considered only respondents who were in units with at least one other and a maximum of 40 employees. A total number of 93,576 subordinates in 11,177 teams could be analyzed. Data was collected through anonymous online questionnaires that were distributed by the organization to all employees. Demographic characteristics, response rates, team size and numbers of cases and teams for each country are shown in Table 1.

Table 1: Demographic characteristics

Country	N	N	Individual	Teams	Response rate (%)	Team size	Gender		Age					Tenure				
							Male (%)	Female (%)	16 – 25 (%)	26 – 35 (%)	36 – 45 (%)	46 – 55 (%)	56 & older (%)	Up to 2 years (%)	2 – 7 years (%)	8 – 15 years (%)	More than 15 years (%)	
Total	93576	11177			77.69	15.81		71.2	28.8	6.4	18.5	34.8	36.0	4.3	6.8	14.6	21.2	57.4
Austria	1438	269			83.21	9.55		62.9	37.1	9.6	50.3	31.9	6.8	1.4	11.5	38.5	45.4	4.6
Brazil	514	36			92.09	22.06		71.9	28.1	14.1	47.8	23.1	12.4	2.6	26.5	44.7	20.0	8.8
Croatia	2032	264			67.23	19.01		63.0	37.0	2.1	27.3	40.3	25.1	5.2	5.1	14.4	32.8	47.7
Czech Republic	290	64			70.82	10.23		81.2	18.8	7.2	57.4	21.3	9.9	4.2	12.7	65.3	18.3	3.7
France	249	27			65.45	21.21		61.3	38.8	2.5	27.8	39.0	26.6	4.1	13.3	43.3	28.8	14.6
Germany	78339	8873			77.98	15.89		70.6	29.4	5.5	13.4	35.6	40.6	4.8	3.7	10.1	20.4	65.8
Great Britain	620	138			77.27	12.83		76.5	23.5	2.1	24.9	45.1	21.1	6.9	25.9	49.8	20.7	3.6
Hungary	3093	337			87.94	16.66		63.9	36.1	12.4	48.6	27.1	9.7	2.2	32.2	26.0	20.0	21.8
Italy	200	47			68.61	10.01		80.9	19.1	-	23.9	47.3	25.5	3.2	2.7	33.9	43.5	19.9
Malaysia	297	54			71.00	13.70		67.7	32.3	22.0	61.3	16.4	0.3	-	54.3	40.7	4.6	0.4
Mexico	335	33			85.24	19.12		71.2	28.8	5.1	44.0	42.8	6.3	1.8	21.6	34.5	37.2	6.6
Netherlands	1509	337			72.07	10.33		62.1	37.9	19.4	39.1	27.6	10.0	3.9	23.9	44.9	28.7	2.5
Slovakia	1464	141			78.00	19.89		77.8	22.2	20.8	65.6	9.5	3.3	0.7	38.5	55.2	3.8	2.5
South Africa	988	215			58.24	13.68		66.2	33.8	6.5	34.7	31.5	23.3	3.9	33.8	28.2	18.6	19.4
Spain	1881	280			70.16	15.81		78.2	21.8	4.4	43.9	39.8	10.8	1.1	7.8	48.9	31.4	11.9
Switzerland	327	62			76.86	9.15		83.3	16.7	13.6	28.8	31.0	21.1	5.6	16.8	40.7	31.7	10.9

Note. Gender was coded male = 1 and female = 2.

Measures

Cross-cultural literature indicates that a systematic bias may occur if respondents complete a survey that is not in their native language (Brislin, 1986). To prevent this, the questionnaires were translated in 15 languages (e.g., English, Dutch) and we did not analyze cases in which respondents do not complete the questionnaire in their own language.

Transformational leadership was assessed with six selected items of the German adapted version of the Multifactor Leadership Questionnaire (MLQ 5x; Bass and Avolio, 1995; Felfe & Goihl, 2002) rated on a five-point scale (1 = “strongly disagree” to 5 = “strongly agree”). These items were selected based on the results of a factor analysis (Wolf, 2012) and internal consistencies ranged between $\alpha = .93$ (Czech Republic) and $\alpha = .96$ (Malaysia) for country samples, with an average of $\alpha = .94$. A sample item is: “My supervisor articulates a compelling vision of the future.”

In order to assess *contingent reward leadership*, four items of contingent reward leadership (MLQ 5x; Bass & Avolio, 1995; Felfe & Goihl, 2002) were used. These items were selected based on the results of a factor analysis (Wolf, 2012). The items were rated on a five-point scale and internal consistencies ranged between $\alpha = .86$ (South Africa) and $\alpha = .92$ (Italy) for country samples, with an average of $\alpha = .91$. A sample item is: “My supervisor clearly defines who is responsible for which achievements in the team.”

Laissez-faire leadership was measured with one item (MLQ 5x; Bass & Avolio, 1995; Felfe & Goihl, 2002). The item is: “My supervisor takes care of important/pressing questions/issues immediately (recoded).”

Well-being was measured with the WHO-5 index (Bech, Olsen, Kjoller, & Rasmussen, 2003). The items were rated on a six-point scale (1 = “Never” to 6 = “All the time”) and internal consistencies ranged between $\alpha = .88$ (Switzerland) and $\alpha = .95$ (Malaysia) for country samples, with an average of $\alpha = .91$. A sample item is: “Over the last two weeks, I woke up feeling fresh and rested.”

Physical health was assessed with 3 items of the Giessener complaint questionnaire (GGB-24; Brähler, Hinz, & Scheer, 2006) asking for headache, backache and fatigue. These items were also selected based on the results of a factor analysis (Wolf, 2012). They were rated on a 5-point scale (1 = “Almost every day” to 5 = “Never”). Internal consistency ranged between $\alpha = .65$ (Switzerland) and $\alpha = .80$ (South Africa) for country samples, with an average of $\alpha = .75$. We used this physical indicator of health in addition to the WHO-5 as a comprehensive analysis of health should ideally include both physical and psychological indicators of health. As expected, both variables are moderately correlated in our study with $r = .59$ ($p < .01$).

Power distance was assessed at the country level based on findings from a current meta-analysis (Taras, Steel, & Kirkman, 2011) that offers a refined set of national cultural indices and country rankings along the dimensions of Hofstede’s model of culture (see Table 4).

Aggregation verification at national level of analysis

Scale scores were aggregated at the *country level* to allow for cross-country comparisons. To justify aggregation, we calculated internal consistency and within-group agreement. Table 2 shows that all indicators supported aggregation. Cronbach's alphas were above .70 for all scales and ICC's (1) were acceptable in all cases. The mean rwg_j's were above .70 for transformational leadership, contingent reward and well-being scales. Due to LeBreton and Senter (2008), rwg_j values of .51 to .70 can be interpreted as moderate agreement. Thus, the rwg_j of the scales measuring laissez-faire, well-being, emotional exhaustion and physical health can be interpreted as moderate agreement.

Aggregation verification at team level of analysis

Before data of transformational and contingent reward leadership was aggregated at the team level, it was tested if different subordinates attributed the same leadership styles to their direct supervisor (i.e. team leader). Table 3 indicates that the raters highly agreed on the three leadership scales. Rwg_j were in all cases equal or above .70, indicating within group agreement. Moreover, Cronbach's alphas were above .90 for all scales, revealing high internal consistency. In all cases ICC (1) and ICC (2) were above .20 and .67 respectively indicating large differences between teams and high homogeneity within teams. Consequently, leadership ratings can be aggregated at the team level of analysis.

Table 2: Questionnaire scales with internal consistency and within-group agreement at national level

Variable	Scale	Number of Items per scale	Internal consistency	Within-Group agreement		ICC	
			Cronbach's Alpha	Mean rwg _j	SD rwg _j	ICC (1)	ICC (2)
Transformational leadership	MLQ 5x (Bass and Avolio, 1995; Felde & Goihl, 2002)	6	.95	.89	.04	.07	.99
Contingent reward	MLQ 5x (Bass and Avolio, 1995; Felde & Goihl, 2002)	4	.91	.75	.09	.09	.99
Laissez-Faire	MLQ 5x (Bass and Avolio, 1995; Felde & Goihl, 2002)	1	-	.54	.11	.07	.99
Well-being	WHO-5 Index (Bech, Olsen, Kjoller, & Rasmussen, 2003)	5	.91	.77	.07	.04	.99
Physical health	GBB-24 (Brähler, Hinz, & Scheer, 2006)	3	.74	.50	.19	.03	.99

Table 3: Questionnaire scales with internal consistency and within-group agreement at team level

Variable	Scale	Number of Items per scale	Internal consistency	Within-Group agreement		ICC	
			Cronbach's Alpha	Mean rwg _j	SD rwg _j	ICC (1)	ICC (2)
Transformational leadership	MLQ 5x (Bass and Avolio, 1995; Felte & Goihl, 2002)	6	.96	.88	.20	.23	.71
Contingent reward	MLQ 5x (Bass and Avolio, 1995; Felte & Goihl, 2002)	4	.94	.81	.21	.20	.67
Laissez-Faire	MLQ 5x (Bass and Avolio, 1995; Felte & Goihl, 2002)	1	-	.70	.24	.21	.69

Results

Relations between transformational, contingent reward and laissez-faire leadership

Means, standard deviations, and correlations among the leadership measures are displayed in Table 4. According to the perception of the subordinates, transformational and contingent reward leadership were employed to a *similar* degree by their supervisors in Brazil ($M = 3.35$; $M = 3.37$), Czech Republic ($M = 3.62$; $M = 3.64$), Croatia ($M = 3.59$; $M = 3.61$), Malaysia ($M = 3.39$; $M = 3.42$), and South Africa ($M = 3.36$; $M = 3.36$). Contingent reward leadership was *more frequently* experienced than transformational leadership in Austria ($M = 4.03$), Switzerland ($M = 3.64$), Germany ($M = 3.84$), France ($M = 2.95$), Great Britain ($M = 3.40$), Hungary ($M = 3.88$), Italy ($M = 3.29$), Mexico ($M = 3.15$), Netherland ($M = 3.71$), Spain ($M = 3.01$) and Slovakia ($M = 3.62$). The least frequently used style in all 16 countries was Laissez-faire leadership, ranging from $M = 1.81$ to $M = 2.64$. Furthermore, transformational leadership was *highly* correlated with contingent reward in all countries, ranging from $r = .82$ to $r = .92$. Moreover, laissez-faire leadership showed strong negative relationships with transformational leadership ($-.63 \leq r \leq -.80$) and contingent reward ($-.57 \leq r \leq -.78$). Taken together, these results are in line with previous findings based on the MLQ. The scales are highly correlated and, therefore, it is questionable if they assess independent constructs (van Knippenberg & Sitkin, 2013). However, we also found systematic mean differences across teams and countries.

Table 4: Descriptive statistics

	N	Individual	Teams	Transformational Leadership		Contingent reward		Laissez Faire		Power distance		Well-being		Physical health		Correlations	
				M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Total	93576		11177	3.61	0.99	3.80	0.97	2.04	0.99	0.27	3.68	1.20	3.13	0.96	.89**	-.76**	-.72**
Austria	1525		279	3.77	0.98	4.03	0.92	1.89	0.99	-0.04	3.95	1.11	3.32	0.91	.88**	-.75**	-.70**
Brazil	394		40	3.35	0.91	3.37	0.97	2.07	0.85	1.56	3.88	1.02	3.09	1.01	.91**	-.65**	-.64**
Croatia	2103		251	3.59	0.89	3.61	0.90	2.09	0.90	0.24	4.00	1.15	3.11	1.01	.91**	-.74**	-.72**
Czech Republic	1912		386	3.62	0.92	3.64	0.93	1.81	0.86	-0.82	3.51	1.13	-	-	.82**	-.63**	-.57**
France	294		33	2.88	0.98	2.95	1.01	2.64	1.17	1.44	3.27	1.21	3.28	1.06	.88**	-.65**	-.63**
Germany	77691		8766	3.64	0.99	3.84	0.97	2.01	0.99	0.27	3.65	1.22	3.11	0.97	.89**	-.76**	-.72**
Great Britain	642		137	3.24	0.87	3.40	0.89	2.45	0.99	0.22	3.77	1.13	-	-	.85**	-.71**	-.66**
Hungary	3171		426	3.69	0.88	3.88	0.88	1.96	0.91	0.30	3.86	1.07	3.17	0.87	.86**	-.72**	-.67**
Italy	261		68	3.14	0.95	3.29	0.98	2.38	1.04	0.15	3.66	1.26	3.55	0.94	.90**	-.69**	-.66**
Malaysia	1495		66	3.39	0.91	3.42	0.87	2.29	0.94	0.43	3.51	1.24	3.13	0.94	.90**	-.79**	-.75**
Mexico	340		41	3.07	1.06	3.15	1.07	2.55	1.14	1.36	3.86	1.17	3.03	0.98	.92**	-.80**	-.78**
Netherlands	72		296	3.51	0.92	3.71	0.92	2.17	0.97	0.08	4.02	1.14	3.51	0.99	.87**	-.74**	-.70**
Slovakia	360		433	3.55	0.77	3.62	0.84	1.95	0.80	0.28	3.56	1.13	3.08	0.97	.83**	-.65**	-.57**
South Africa	1525		240	3.36	0.84	3.36	0.82	2.43	0.84	-0.29	3.73	1.28	3.15	1.06	.86**	-.74**	-.66**
Spain	1956		304	2.88	1.04	3.01	1.08	2.61	1.14	-0.54	3.94	1.09	3.30	0.98	.91**	-.78**	-.75**
Switzerland	351		70	3.40	0.99	3.64	0.97	2.36	1.04	-0.31	3.90	1.03	3.48	0.87	.90**	-.79**	-.73**

Note. ** $p < .01$, * $p < .05$. M = Mean, SD = Standard deviation, TFL = Transformational leadership, CR = Contingent reward, LF = Laissez-faire leadership. Missing values in the variable physical health were caused by directives on health and safety at work in the Czech Republic and Great Britain.

Relations between leadership styles and subordinates well-being and physical health

Table 5 presents the correlations of the leadership styles and the two outcome criteria. As postulated in H1a, transformational leadership was significantly correlated with subordinates well-being in *all* countries and these relationships differ in magnitude, ranging from $r = .35$ to $r = .50$. According to hypothesis H1b, transformational leadership positively correlated with subordinates' physical health in *all* countries and these relationships differed in magnitude, ranging from $r = .16$ to $r = .34$. Concordant with H2a, contingent reward was also positively correlated with subordinates well-being in *all* countries and this relationship differed in magnitude, ranging from $r = .38$ to $r = .48$. Furthermore in line with H2b, contingent reward positively correlated with subordinates' physical health in *all* countries and this relationship differed in magnitude, ranging from $r = .14$ to $r = .33$. In line with H3a, laissez faire leadership was *negatively* correlated with subordinates well-being in *all* samples and these relationships differed in magnitude, ranging from $r = -.19$ to $r = -.43$. Furthermore, laissez faire leadership is negatively correlated with subordinates physical health in *all* countries (H3b), ranging from $r = -.15$ to $r = -.29$. In sum, we found strong empirical support for relationships between leadership styles and a) well-being and b) physical health for all 16 countries. These associations are substantial and can be also found in the following multi-level-analysis where the nested structure of our data as well as several demographic and health related context variables are controlled for (cf. Table 6).

Power distance as a moderator

In order to test the proposed cross-level interaction effect of power distance (hypotheses H4a and H4b), we followed the recommendation of Aguinis, Gottfredson and Culpepper (2013). Table 6 summarizes the results from hierarchical linear modeling (HLM) analyses. Our hypotheses imply that significant variance in individual well-being and physical health can be explained at individual, team and national level. To test our hypotheses, we first had to ensure that significant team and country variance in individual well-being and physical health existed. Thus, we first estimated a null model in which individual well-being or physical health was a linear function of four parameters: the grand mean of the population of individuals, the random effect due to individuals, the random effect due to teams and the random effects due to nations. We found both significant between-team variability ($\tau_{00} = .18, p < .001$) and between-nation variability ($\tau_{00} = .03, p < .001$) for individual well-being. Furthermore, we found both significant between-team variability ($\tau_{00} = .08, p < .001$) and between-nation variability ($\tau_{00} = .02, p < .001$) for physical health. Model 1 (Table 6) includes all individual-level predictors, team-level predictors and national predictors. As postulated in H1a and H1b, team-level transformational leadership significantly predicted subordinates well-being ($\gamma = .44, p < .01$) and physical health ($\gamma = .15, p < .01$). Moreover, team-level contingent reward significantly predicted subordinates well-being ($\gamma = .09, p < .01$) and physical health ($\gamma = .12, p < .01$) as expected (H2a and H2b). The standard deviation of transformational leadership within teams significantly predicted follower physical health ($\gamma = -.03, p < .05$), supporting hypothesis H6b.

Table 5: Correlations of leadership style and outcome criteria

	N	Well-being										Physical Health									
		Indiv- dual	Teams	TFL x WB	CR x WB	LF x WB	TFLSD xWB	Teamsi zxWB	Gender xWB	Age x WB	Tenure xWB	TFL x PH	CR x PH	LF x PH	TFLSD xPH	Teamsi zxPH	Gender xPH	Age x PH	Tenure xPH		
Austria	1438			.40**	.37**	-.29**	-.18**	.12*	.03	-.07*	.21**	.20**	-.18**	-.20**	.03	-.17**	.05	-.02			
Brazil	514			.41**	.37**	-.29**	-.03	-.01	.10*	.05	.28**	.24**	-.22**	.01	.01	-.15**	.10*	-.03			
Croatia	2032			.44**	.42**	-.34**	-.17**	.01	-.02	.03	.32**	.30**	-.23**	-.04	-.02	-.17**	.06*	-.02			
Czech Republic	290			.46**	.41**	-.28**	-.01	-.10	.12	-.10	-	-	-	-	-	-	-	-			
France	249			.42**	.48**	-.29**	.03	.01	-.10	-.07	.28**	.28**	-.29**	.08	-.18	-.20**	.00	-.11			
Germany	78339			.49**	.42**	-.34**	-.22**	-.10**	-.02**	-.08**	.31**	.30**	-.25**	-.17**	-.10**	-.07**	-.04**	-.11**			
Great Britain	620			.42**	.41**	-.30**	-.15	-.06	.07	.02	-	-	-	-	-	-	-	-			
Hungary	3093			.45**	.42**	-.33**	-.18**	.03	.01	-.01	.29**	.27**	-.23**	-.11*	-.04	-.13**	.06**	.00			
Italy	200			.42**	.40**	-.43**	-.00	-.07	.12	-.03	.21**	.20**	-.18*	-.44**	-.01	.13	-.04	-.05			
Malaysia	297			.50**	.46**	-.41**	-.37*	-.01	.10	-.16**	.34**	.33**	-.27**	-.39**	-.06	-.04	.01	-.06			
Mexico	335			.48**	.48**	-.39**	.07	-.09	-.12*	.04	.26**	.29**	-.22**	-.24	-.26	-.05	.10	-.03			
Netherlands	1509			.40**	.39**	-.25**	-.18**	-.06	-.01	-.10**	.23**	.23**	-.16**	-.17**	-.07	-.22**	.10**	.01			
Slovakia	1464			.35**	.35**	-.19**	.03	.12	.05	-.07**	.24**	.26**	-.16**	-.05	.09	-.11**	.04	-.01			
South Africa	988			.40**	.39**	-.34**	-.13	.03	-.04	-.03	.30**	.29**	-.24**	-.10	.06	-.16**	-.00	-.02			
Spain	1881			.40**	.39**	-.30**	-.14*	.06	-.07**	-.00	.28**	.28**	-.23**	-.07	-.04	-.21**	.10**	.02			
Switzer- land	327			.38**	.36**	-.22**	-.25	-.16	.03	.05	.16**	.14**	-.15**	-.01	.05	-.09	.12*	-.01			

Note. ** $p < .01$. * $p < .05$. TFL = Transformational leadership, CR = Contingent reward, LF = Laissez-faire leadership, TFLSD = Standard deviation of transformational leadership ratings, WB = Well-being, PH = Physical health. Missing values in the variable physical health were caused by directives on health and safety at work in the Czech Republic and Great Britain.

Table 6: Results of multilevel modeling analysis

Variables	Well-being Model			Physical health Model				
	0 Null model	1 Random Intercept and Fixed Slope	2 Random intercept and random slope	3 Cross-Level- Interaction	0 Null model	1 Random Intercept and Fixed Slope	2 Random intercept and random slope	3 Cross-Level- Interaction
Level 1								
Intercept	3.77** (0.05)	3.80** (.06)	3.80** (.05)	3.81** (.05)	3.22** (.04)	3.20** (.05)	3.19** (.05)	3.20** (.05)
Gender		0.02* (.01)	0.03* (.01)	0.03* (.01)		-0.19** (.02)	-0.19** (.02)	-0.19** (.02)
Age		0.08** (.01)	0.08** (.01)	0.08** (.01)		0.05** (.01)	0.05** (.01)	0.05** (.01)
Tenure		-0.14** (.02)	-0.13** (.01)	-.13** (.01)		-0.13** (.02)	-0.13** (.02)	-0.13** (.02)
Level 2								
Teamsize		-0.01 (.01)	-0.01* (.01)	-0.01* (.01)		-0.01** (.01)	-0.01** (.01)	-0.01** (.01)
Standard deviation of transformational leadership rating		0.01 (.01)	0.01 (.01)	0.01 (.01)		-0.03* (.01)	-0.03* (.01)	-0.03* (.01)
Contingent reward transactional leadership		0.09** (.02)	0.09** (.03)	0.09** (.03)		0.12** (.01)	0.12** (.01)	0.12** (.01)
Transformational leadership		0.44** (.03)	.41** (.03)	0.42** (.03)		0.15** (.01)	0.14** (.02)	0.15** (.02)
Level 3								
Power distance		0.01 (.10)	0.06 (.08)	0.05 (.08)		-0.01 (.07)	0.04 (.06)	0.02 (.07)
Cross-level interaction								
Transformational leadership x power distance				.09* (.04)				0.07* (.03)
Within-team (L1) variance σ	1.25	1.23	1.24	1.24	0.84	0.83	0.83	.83
Between-team (L2) variance τ	0.18	0.10	0.10	0.10	0.08	0.05	0.05	.05
Between-country (L3) variance	0.03	0.05	0.04	0.04	0.02	0.03	0.03	.03
R²		.05	.06	.06		0.03	.04	.04
Deviance	294207.15	292604.59**	290770.05**	290750.62**	254953.32	252147.81**	252140.29*	252130.74*
(Δ p-value)								

Note. ** $p < .01$, * $p < .05$, ³ Adapted from Raudenbush & Bryk (2002). L1 = Level 1; L2 = Level 2; L3 = Level 3. L1 N = 93.576, L2 = 11.177, L3 = 16. Values in parentheses are standard errors.

As a third step in model 2, we analyzed if the relationship between team-level transformational leadership and subordinates' well-being and physical health varied across nations. Therefore, we developed a random intercept and random slope model, which added a random slope component, so that the slope of transformational leadership on subordinates well-being and physical health varied across nations. We found significant between-nation variability for individual well-being ($\tau_{00} = .04, p < .001$) and physical health ($\tau_{00} = .03, p < .001$). According to Aguinis, Gottfredson and Culpepper (2013), we additionally compute a -2log likelihood ratio between model 1 (i.e. model without a random slope component) and model 2 (i.e. model with a random slope component). Multiplying the log likelihood value by -2 yielded a value labeled deviance in Table 6 and indicated a significantly increased model fit from model 1 to model 2, indicating that the relationship between transformational leadership and health outcomes varied depending on national membership. Model 3 of Table 6 included all individual-level predictors, team-level predictors, national-level predictors and cross-level interaction terms. As expected, the interaction term between transformational leadership and power distance was significant and positive for well-being ($\gamma = .09, p < .01$) and physical health ($\gamma = .07, p < .01$), supporting hypotheses H4a and H4b.

The pattern of the significant cross-level interaction effects of power distance on the relation between team-level transformational leadership and individual health outcomes are illustrated in Figure 2. By using the variance and covariance matrix of regression coefficients (gammas), we ran simple slope tests following the procedure by Preacher, Curran and Bauer (2006). When subordinates are exposed to supervisors within a high level power distance nation, transformational leadership was stronger positively related to individuals well-being and physical health. The figures suggest that power distance alone does not have a positive relationship with individual well-being and physical health, but it does have such a positive relationship for individuals with high levels of transformational leadership, which is consistent with hypothesis 4a and 4b.

Augmentation effect of transformational leadership

According to recommendations of Wang, Oh, Courtright and Colbert (2011), hierarchical linear modeling was conducted for each country to test H5. Table 7 and 8 summarize the results from hierarchical linear modeling (HLM) analyses. First, we estimated a null model in which individual well-being or physical health was a linear function of three parameters: the grand mean of the population of individuals, the random effect due to individuals and the random effect due to teams. We found significant between-team variability for *all* countries. Model 1 in Table 7 and 8 shows the HLM results from regression individual demographic characteristics (age, gender, tenure), team level standard deviation of transformational leadership and group size. In model 2, we added contingent reward at team level. Finally, we added transformational leadership at team level in model 3 and thus, model 3 included all individual- and team-level predictors of our research model. To compare the different models regarding their model fit, a -2 log likelihood ratio was computed between the preceding and current model. Multiplying the log likelihood value by -2 yielded a value labeled "deviance" (Table 7 and 8), which can be used to compare the relative fit of two competing models.

Figure 2: Cross-level moderation on well-being and physical health

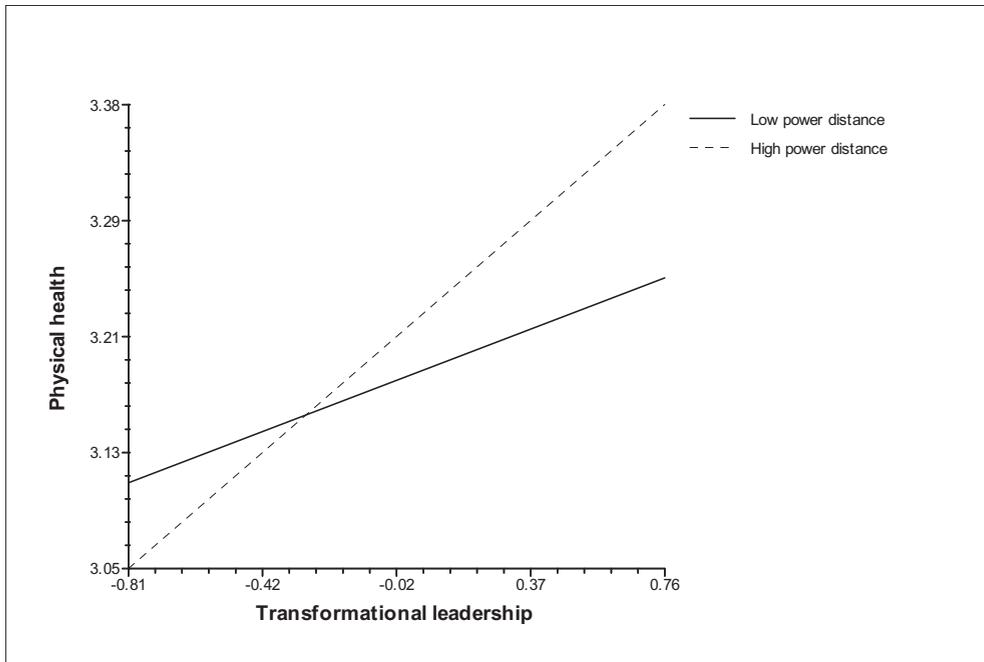
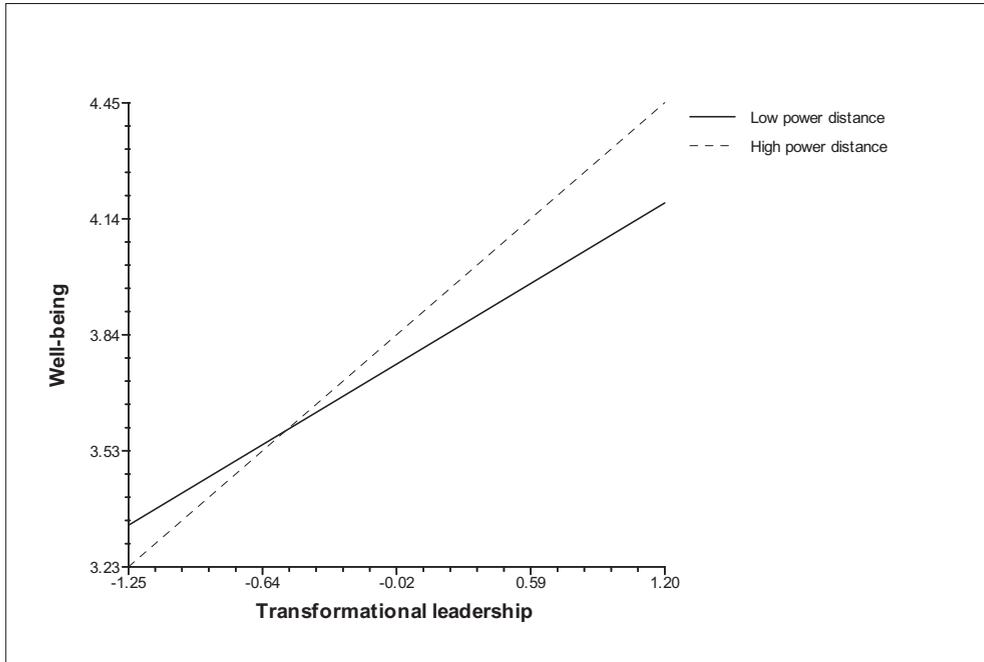


Table 7: Summary of augmentation effects of transformational leadership (well-being)

	Model 1					Model 2					Model 3				
	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^a	Deviance (Δ p-value)	χ ² (df)	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^a	Deviance (Δ p-value)	χ ² (df)	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^a	Deviance (Δ p-value)	χ ² (df)
Austria	.06	.01	.27	4033.36**	29.23(5)	.04	.01	.48	4002.92**	30.44(1)	.04	.02	.50	4000.07	2.85(1)
Brazil	.02	.00	.62	1444.73	8.69(5)	.03	.01	.62	1438.90*	1430.2(4)	.02	.02	.64	1438.89	0.00(1)
Croatia	.06	.00	.20	5695.02**	25.24(5)	.04	.01	.51	5654.56**	40.46(1)	.03	.01	.60	5641.54**	13.02(1)
Czech Republic	.03	.04	.22	807.45*	13.57(5)	.00	.06	.91	791.77**	15.68(1)	.01	.07	.91	788.10*	3.67(1)
France	.00	.04	.13	717.29	7.99(1)	.00	.06	.81	709.88	7.41(1)	.00	.06	.84	709.70	0.18(1)
Germany	.12	.00	.14	217279.01**	992.85(5)	.08	.01	.40	215649.87**	1629.14(1)	.08	.01	.44	215382.37**	267.50(1)
Great Britain	.00	.01	.95	1734.12**	22.11(5)	.00	.05	.99	1710.03**	24.09(1)	.00	.05	.99	1708.52	1.51(1)
Hungary	.03	.00	.24	8726.84**	28.71(5)	.01	.01	.65	8680.07**	46.77(1)	.01	.01	.78	8662.61**	17.46(1)
Italy	.03	.01	.55	561.99	4.75(6)	.00	.01	.99	557.21*	4.79(1)	.00	.03	.99	549.22**	7.99(1)
Malaysia	.00	.04	.98	814.32**	24.23(5)	.00	.06	.99	808.68*	5.65(1)	.00	.07	.99	805.89	2.79(1)
Mexico	.00	.04	.51	933.79*	14.08(5)	.00	.10	.51	914.11**	19.68(1)	.00	.10	.62	913.99	0.11(1)
Netherlands	.06	.01	.12	4236.04**	28.67(5)	.02	.02	.71	4174.31**	61.73(1)	.02	.02	.71	4173.81	0.50(1)
Slovakia	.04	.01	.07	4119.82**	23.04(5)	.02	.02	.50	4088.33**	31.50(1)	.02	.02	.50	4087.95	0.38(1)
South Africa	.05	.00	.08	2789.70	6.05(5)	.02	.01	.70	2753.06**	36.64(1)	.02	.01	.71	2752.05	1.02(1)
Spain	.10	.01	.06	5257.67**	27.84(5)	.06	.01	.46	5208.91**	48.76(1)	.06	.01	.49	5206.94	1.97(1)
Switzerland	.04	.02	.33	912.20**	11.23(5)	.04	.02	.34	911.44	0.76(1)	.02	.03	.35	909.27	2.17(1)

Note. ** p < .01. * p < .05. ^a Adapted from Raudenbush & Bryk (2002). Model 1 includes age, gender and tenure at level 1 and standard deviation of TFL and group size at level 2. Model 2 adds the aggregate mean of contingent reward at level 2. Model 3 further adds the aggregate mean of transformational leadership at level 2.

Table 8: Summary of augmentation effects of transformational leadership (physical health)

	Model 1					Model 2					Model 3				
	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^b	Deviance (Δ p-value)	X ² (df)	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^b	Deviance (Δ p-value)	X ² (df)	ICC(1)	R ² _{Level 1} ^a	R ² _{Level 2} ^b	Deviance (Δ p-value)	X ² (df)
Austria	0.03	.01	.51	4018.99**	48.83(5)	.03	.01	.59	4012.48*	5.52(1)	.03	.01	.62	4011.80	0.68(1)
Brazil	.04	.03	.27	1433.08**	18.24(5)	.03	.03	.46	1429.76*	3.32(1)	.03	.03	.46	1428.46	1.30(1)
Croatia	.07	.02	.23	5633.66**	72.18(5)	.06	.03	.41	5609.49**	24.17(1)	.05	.03	.47	5603.08*	6.41(1)
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
France	.00	.07	.18	707.32	2.00(1)	.00	.08	.61	705.56	1.76(1)	.00	.08	.64	704.07	1.49(1)
Germany	.08	.01	.19	218630.05**	1567.53(5)	.06	.01	.38	217767.02**	863.03(1)	.06	.01	.39	217708.48**	58.54(1)
Great Britain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	.03	.01	.33	8679.62**	70.04(5)	.02	.01	.54	8654.46**	25.17(1)	.02	.02	.54	8650.07*	4.38(1)
Italy	.00	.01	.85	556.83	9.10(5)	.01	.02	.86	555.27	1.56(1)	.01	.02	.88	554.59	0.88(1)
Malaysia	.00	.02	.91	824.78*	14.31(5)	.00	.02	.92	824.76	0.02(1)	.00	.04	.98	818.95*	5.80(1)
Mexico	.00	.04	.79	932.83*	15.04(5)	.00	.06	.83	927.42*	5.42(1)	.00	.06	.83	927.28	0.14(1)
Netherlands	.06	.05	.29	4169.55**	91.72(5)	.04	.06	.47	4138.18**	31.36(1)	.04	.06	.47	4138.12	0.06(1)
Slovakia	.03	.02	.06	4121.57**	25.20(5)	.02	.02	.29	4106.70**	14.86(1)	.02	.02	.29	4106.62	0.08(1)
South Africa	.00	.03	.53	2772.17**	30.68(5)	.00	.04	.63	2758.21**	13.97(1)	.00	.04	.63	2758.10	0.10(1)
Spain	.04	.04	.37	5215.52**	100.76(5)	.02	.04	.62	5187.69**	27.83(1)	.02	.04	.62	5187.57	0.11(1)
Switzerland	.04	.02	.33	912.20**	11.23(5)	.13	.05	.36	903.92*	0.49(1)	.14	.06	.38	902.17	1.75(1)

Note. ** $p < .01$. * $p < .05$. ^a Adapted from Raudenbush & Bryk (2002). Model 1 includes age, gender and tenure at level 1 and standard deviation of TFL and group size at level 2. Model 2 adds the mean of contingent reward at level 2. Model 3 adds the mean of transformational leadership at level 2. Missing values in the variable physical health were caused by directives on health and safety at work in the Czech Republic and Great Britain. *

Table 7 presents the results of the multilevel analysis of the augmentation effect of transformational leadership on subordinates' well-being for each model separately. As postulated in H5a, transformational leadership positively augmented the relationship between contingent reward and follower well-being in the Czech ($D = 788.10, p < .05$), German ($D = 215382.37, p < .01$), Croatian ($D = 5641.54, p < .01$), Hungarian ($D = 8662.61, p < .01$) and Italian ($D = 549.22, p < .01$) sample.

The results of the multilevel analysis of the augmentation effect of transformational leadership on subordinates' physical health are displayed in Table 8. In line with H5b, transformational leadership positively augmented the relationship between contingent reward and follower physical health in the German ($D = 217708.48, p < .01$), Croatian ($D = 5603.08, p < .05$), Hungarian ($D = 8650.07, p < .05$) and Malaysian ($D = 818.95, p < .05$) sample.

Transformational climate strength and team size

Within the multi-level analyses, we also tested and found significant reduction of deviance-level mainly due to the homogeneity in transformational leadership ratings and team size in 10 samples (well-being) or 12 samples (physical health). Specifically, we found significant negative correlations between the homogeneity in transformational leadership ratings in teams and employees health in Austria ($r = -.18$ for well-being and $r = -.20$ for physical health), Germany ($r = -.22$ for well-being and $r = -.17$ for physical health), Spain ($r = -.14$ for well-being), Croatia ($r = -.17$ for well-being), Hungary ($r = -.18$ for well-being and $r = -.11$ for physical health), Italy ($r = -.44$ for physical health), Malaysia ($r = -.37$ for well-being and $r = -.39$ for physical health) and Netherland ($r = -.18$ for well-being and $r = -.17$ for physical health). In general, the standard deviation of transformational leadership within teams significantly predicted follower physical health ($\gamma = -.03, p < .05$), supporting hypothesis 6b (see Table 6). It should be noted that we also found some significant correlations between team size and well-being/health in Austria ($r = .12$ for well-being) and Germany ($r = -.10$ for well-being and $r = -.10$ for physical health). Results of multi-level analyses in Table 6 indicate that team size significantly predicted follower physical health ($\gamma = -.01, p < .01$).

Discussion

The main goal of our large-scale, multi-level and multi-national study was to investigate whether transformational leadership and contingent reward can be considered to be effective *global* health promoting leadership styles. Moreover, we analyzed for the first time if leaders who are both transformational and contingent reward have more healthy employees (augmentation effect) and how transformational leadership climate in teams is linked to employees' health. The results of our research provide strong support for the health promoting effect of transformational leadership and contingent reward across nations. Moreover, predominantly in the largest sub-samples we also found the expected augmentation effect. Having a strong transformational team climate was also significantly and positively associated with employees' health in 7 of the 16 countries. As our sample was almost four times larger than the sample of the latest meta-analysis on the effectiveness of transformational leadership (Judge & Piccolo, 2004), the strength and consistency of the findings is impressive.

More specifically, our results confirm the health promoting effect of perceived transformational leadership and contingent reward on employees' well-being and physical health in Austria, Brazil, Croatia, Czech Republic, Germany, Great Britain, Hungary, Italy, Malaysia, Mexico, Netherlands, Slovakia, Spain, Switzerland and South Africa.

Unexpectedly, the results of multilevel analysis show no significant health enhancing effect of transformational leadership and contingent reward in the French sample. These effects are probably due to the fact that the ICCs are very small in the French sample, indicating only slight group differences in both outcome criteria. Thus potential level-2 effects are hardly identifiable. Another possible reason could be that the relatively small sample size emanate from only one regional subsidiary and, therefore, represents a relatively *homogeneous* subgroup concerning health related outcomes. Moreover, the French sample comprises an operating division (i.e. Call Center), which are known for poor well-being and physical health ratings.

In addition, we examined the role of power distance in health-promoting effects of transformational leadership and found that power distance moderates the effects of transformational leadership on followers' health and well-being, thus the relationship is stronger under a high power distance culture than under a low power distance culture. Due to the outstanding role of leaders in high power distance cultures (Dickson, Den Hartog, & Mitchelson, 2003), the core transformational characteristics' support, individual consideration, motivation and stimulation are probably stronger valued, and thus, enhanced the effects of transformational leadership in high power distance cultures. In sum, we recommend international firms to develop a group wide application of transformational health-promoting leadership characteristics, but to adapt it in an adequate extent to local socio-cultural characteristics (Brodbeck, 2008). Thus, international firms in high power distance cultures should give priority to health-promoting leadership trainings because the potential health-enhancing and/or health-hampering effects of leadership are important levers to reduce health-related absenteeism and incapacity. In sum, our findings that national power distance moderated the health-promoting effects of transformational leadership also shed more light on the inconsistent findings on the universal impact of transformational leadership across countries. Specifically, it is possible that the different magnitudes of the health-promoting effects and the augmentation effects of transformational leadership found in and across various countries may have been a consequence of different national power distance values. Thus, it is imperative to consider variation in national culture differences to better understand health-enhancing transformational leadership effects across countries. Future cross-national studies on health-promoting leadership should investigate the role of both cultural and socio-economic factors in polycontextual approaches (Tsui, Nidfadkar, & Yi Ou, 2007).

In support of current criticisms regarding the quality of the underlying measurements of transformational and transactional leadership (van Knippenberg & Sitkin, 2013), we further found very high correlations between transformational and contingent reward leadership (ranging from $r = .82$ to $r = .92$). Despite these high correlations, it should be noted that we could find in some countries the expected augmentation effect of transformational leadership.

Although we confirmed the augmentation effect of transformational leadership in these samples, we agree with van Knippenberg and Sitkin (2013) that this high overlap between transformational and transactional leadership scales is a severe problem that deserves more attention. However, there is almost no overlap between transformational and contingent reward leadership measures and the health-measures we used in our study. Thus, we object to the van Knippenberg and Sitkin's (2013) conclusion that "there is no suitable basis to build from" (p. 43). Our findings show that there is indeed evidence of a *global* effective health promoting transformational and contingent reward leadership effect for the well-being of employees, even though some country specific differences are also observable. Therefore, we suggest that future research should build on these insights and try to develop even better conceptualization of health specific leadership styles (see for example Franke & Felfe, 2011b; Gurt, Schwennen, & Elke, 2011; Vincent, 2012). As our multi-source and multi-level findings – following the suggestion of Wang, Oh, Courtright and Colbert (2011) – overcome to some degree the issue of single source variance in individual level data, causing inaccurate results due to perceptual bias or implicit leadership theories of the individuals, further research efforts in this direction are definitely warranted.

Interestingly, we also found some substantial correlations between team size and health. Based on the work of Ricketta and van Dick (2005) it can be assumed that employees experience higher organizational identification and commitment in smaller teams. Moreover, identification and commitment are well known resources in successfully coping with stressors at work (e.g., Wegge, Schuh, & van Dick, 2012). Thus, our finding that employees' health is better in smaller teams is not surprising. Small teams yield higher identification and this can support the successfully coping with stressors. Future studies might seek to examine in more detail the underlying mechanisms and potential differences between countries.

Furthermore, our results demonstrate that the homogeneity of perceived transformational leadership at the team level also explains variance in subordinates' health and well-being. These effects are substantial and much greater than, for example, the effects of demographic characteristics at the individual level. Consequently, we conclude that well-being and health are complex constructs that are affected by many factors at different levels. In line with recent findings on transformational leadership climates (De Jong & Bruch, 2013), we found *positive* correlations between homogeneity in transformational leadership and health related outcomes. However, this was valid only for some countries (in Austria, Germany, Spain, Croatia, Hungary, Italy, Malaysia and Netherland). Future studies should examine why such differences can occur. In line with the GLOBE-findings (House, Hanges, Javidan, Dorfman, & Gupta, 2004), it might be that homogeneity in transformational leadership at least presents some kind of group orientation and in-group cohesion and thus, lower levels result in decreased well-being/health. We suggest analyzing the importance of leadership climate differences at the team level in future studies, in particular when health-related outcomes are of interest.

Limitations and directions for future research

Our study has several methodological strengths, e.g., using hierarchical linear modeling, a very large sample size and having comparable job levels and jobs across countries. However, there are also some limitations that suggest avenues for future research. First, our study was cross-sectional in nature with leadership behaviors, demographic characteristics and health-related outcomes measured at the same time. Therefore, we cannot infer causality (Stone-Romero & Rosopa, 2011) and future studies should seek to overcome this weakness by applying longitudinal and quasi-experimental research designs. Besides causality issues, longitudinal design should also be useful to investigate potential differences in the perceived leadership behaviors between employees with and without prior health problems. However, the potential that reversed causality (e.g., health problems yield less transformational leadership) underlies our findings is rather unlikely, also in view of experimental studies that found health-promoting effect linked to high identification (Wegge, Schuh, & Dick, 2012), an outcome that was often found as a consequence of transformational leadership.

A second limitation concerns the self-assessed measurement of well-being and physical health indicating a possible common source bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although the WHO-5 index (Bech, Olsen, Kjoller, & Rasmussen, 2003) as a self-administered questionnaire is a validated health instrument, it still would be desirable to include second source, objective health data in future studies. For instance, individual health reports of company physicians or data based on health check-ups would be interesting (e.g., health-related absenteeism, heart rate, blood pressure, steroid hormones). Strict data protection laws with regard to health-related information in most organizations will make this very difficult, though.

Thirdly, although we found strong empirical support for relationships between leadership styles and subordinates well-being/health and for the moderation of power distance, the explained variance our overall research model for well-being ($R^2 = .06$) and physical health ($R^2 = .04$) remains relatively low. However, previous studies reported similar results, ranging from $R^2 = .10$ to $R^2 = .20$ (e.g., Franke & Felfe, 2011). Thus, we suggest analyzing the importance of further health related predictors at individual, team and national level in future studies, in particular when health-orientated leadership styles are of interest.

Furthermore, to account for the single source variance and the possible perception bias, we used hierarchical linear modeling to consider factors on the individual, team and national level. Specifically, we examined demographic characteristics at the *individual* level and we investigated perceived transformational and contingent reward leadership at the *team* level. In addition, we investigated the objective parameter team size and the standard deviation of transformation leadership within teams as an indicator of the homogeneity of leadership behavior at the team level of analysis and power distance at the *national* level. An interesting extension of this procedure would be to control in future studies also for job content and self-collected socio-culture factors as potential impact factors to the effectiveness of leadership behavior and its influence on health and well-being.

Finally, although a comprehensive survey of all health- and leadership-related factors was conducted independently in 16 different countries and the examined parent companies and subsidiaries are operationally independent, the generalizability of its findings is limited because the data came from only *one* global corporate group with a possible homogenous organizational culture. Future research should realize multilevel studies in different organizations to examine also organizational effects.

Conclusion

This study makes an important contribution to the literature by documenting strong health enhancing effects of transformational and contingent reward leadership and health hampering effects of laissez-faire leadership across many nations of the world. Employees led by a contingent reward and transformational leader have better and those who have a laissez-faire leader have worse health. The cultural robustness of these effects is impressive. These effects could be expected as transformational and contingent reward leadership was found, for example, to increase identification, self-efficacy, the meaningfulness of work, social support and role clarity. This, in turn, should be beneficial to employees' health. Moreover, laissez faire leadership often leads to conflicts in teams and role ambiguity that, in turn, hamper employees' health. In line with the criticism of van Knippenberg and Sitkin (2013), we also found that transformational leadership and contingent reward show a great measurement overlap and seem to be not clearly separable constructs. Nevertheless, we also could show that leaders who are both transformational and transactional have more healthy employees in six countries (augmentation effect). If leaders follow the approach of transformational leadership, they should further seek to develop a strong leadership climate strength (defined as the shared perceptions of employees concerning their supervisor's leadership behavior) as this was also beneficial for employees' health in 8 countries. We hope that the findings of our study will stimulate further investigations into the conditions and mechanisms under which leadership behavior relates to various health-related outcomes. It also remains to be seen which other health-specific leadership behaviors will be identified. The preliminary signs are, however, that having a clear, shared vision that gives meaning to work is a health promoting phenomena in many nations, in particular in those with a high power distance.

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