

Empowering Leaders Optimize Working Conditions for Engagement: A Multilevel Study

Michelle R. Tuckey
University of South Australia

Arnold B. Bakker
Erasmus University Rotterdam

Maureen F. Dollard
University of South Australia

Using a multilevel framework, this study examined the role of empowering leadership at the group level by fire brigade captains in facilitating the individual level motivational processes that underpin work engagement in volunteer firefighters. Anonymous mail surveys were completed by 540 volunteer firefighters from 68 fire brigades and, separately, by 68 brigade captains. As predicted on the basis of the Job Demands-Resources model, increased levels of cognitive demands and cognitive resources partially mediated the relationship between empowering leadership and work engagement. In a three-way Leadership \times Demands \times Resources interaction, empowering leadership also had the effect of optimizing working conditions for engagement by strengthening the positive effect of a work context in which both cognitive demands and cognitive resources were high. Our findings shed light on a process through which leaders can empower workers and enhance well-being: via their influence on and interaction with the work environment. They also underscore the need to examine work engagement from a multilevel theoretical perspective.

Keywords: employee engagement, JD-R model, empowering leadership, positive organizational behavior, work engagement

Leaders play an influential role in how employees experience their work and represent an important influence on worker happiness, just ask any group of workers! Empirical data indicate that leaders can have a significant impact on employee health and well-being, not only in terms of creating psychological distress and other negative outcomes (e.g., Skogstad, Einarsen, Torsheim, Aasland, & Hetland, 2007) but also by enhancing general psychological well-being and fostering a positive state of mind (e.g., Arnold, Turner, Barling, Kelloway, & McKee, 2007; Nielsen, Randall, Yarker, & Brenner, 2008a; van Dierendonck, Haynes, Borrill, & Stride, 2004). Less clear, however, are the processes through which leaders can foster positive health and well-being outcomes for their followers. Our research addresses this gap: we are interested how leaders can promote a positive affective-cognitive experience of work by optimizing working conditions. In

particular, we examine the role of empowering leadership in facilitating the motivational processes that underpin follower work engagement.

Our study focuses on how fire brigade captains can enhance volunteer fire-fighter work engagement. Volunteer fire-fighting is a unique form of community service loved by “firees” for the sense of challenge and excitement, the feeling of being part of a family, and the satisfaction of making a difference to the community. In Australia, volunteer fire brigades provide the primary emergency response across up to 95% of the geographical land space. But despite the attractive image, only one third of a volunteer fire-fighter’s time is spent responding to emergencies (Thompson & Bono, 1993). Other activities such as training, administration, fundraising, and fire prevention take up a significant proportion of time. Clearly, it is not all glory and excitement. Indeed, volunteer fire service agencies are faced with the challenge of maintaining the active interest and participation of volunteer firefighters and preventing turnover and withdrawal (cf. McLennan & Birch, 2005). Hence, as well as targeting an important gap in the leadership literature, our research on work engagement is timely for addressing the practical issue of sustaining the active involvement of volunteer firefighters.

Michelle R. Tuckey and Maureen F. Dollard, Work & Stress Research Group, Centre for Applied Psychological Research, School of Psychology, Social Work and Social Policy, University of South Australia, Adelaide, Australia; Arnold B. Bakker, Department of Work and Organizational Psychology, Institute of Psychology, Erasmus University Rotterdam, Rotterdam, the Netherlands.

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Correspondence concerning this article should be addressed to Dr. Michelle R. Tuckey, School of Psychology, Magill Campus, University of South Australia, GPO Box 2471, Adelaide, South Australia 5001 Australia. E-mail: michelle.tuckey@unisa.edu.au

Work Engagement and Individual Level Motivation Processes in the Job Demands-Resources Model

Work engagement is a positive and fulfilling work-related state of mind, characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2004, 2010). In essence, work engagement captures how workers experience their work: as stimulating and

energetic and something to which they really want to devote time and effort—the *vigor* component, as a significant and meaningful pursuit—the *dedication* component, and as engrossing and interesting—the *absorption* component (Bakker, Schaufeli, Leiter, & Taris, 2008). High levels of work engagement have positive outcomes for individuals, such as better psychological health (e.g., Schaufeli, Taris, & van Rhenen, 2008; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) and fewer psychosomatic complaints (e.g., Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001; Schaufeli & Bakker, 2004). Mounting evidence also links engagement to better work performance (e.g., Bakker & Bal, 2010; Bakker, Demerouti, & Verbeke, 2004; Salanova Agut, & Peiró, 2005; Xanthopoulou et al., 2009) and other beneficial outcomes for employers, including organizational commitment (e.g., Hakkanen, Bakker, & Schaufeli, 2006) and proactive behavior (e.g., Salanova & Schaufeli, 2008) (see Demerouti & Cropanzano, 2010, for a review).

The Job Demands-Resources (JD-R) model outlines how work engagement arises through a motivational pathway whereby adequate levels of job resources promote the channeling of energy into work tasks, leading employees to invest high levels of effort and become strongly involved and engrossed in their work (Bakker & Demerouti, 2007; Demerouti & Bakker, 2011). Job resources are those physical, psychological, social, and organizational factors that (a) help workers meet work requirements, (b) buffer against job strain, and/or (c) promote growth and development (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Intrinsically, job resources help workers to meet their basic needs for autonomy, relatedness, and competence (see Ryan & Deci, 2000), and extrinsically, job resources enhance the willingness and ability to successfully complete work tasks (Bakker et al., 2008). A recent meta-analysis (Halbesleben, 2010) supports the link between job resources and work engagement, from studies utilizing longitudinal (e.g., Mauno, Kinnunen, & Ruokolainen, 2007; Schaufeli, Bakker, & van Rhenen, 2009), cross-sectional (e.g., Schaufeli & Bakker, 2004), and daily diary (e.g., Bakker & Bal, 2010; Xanthopoulou et al., 2009) designs. Consistent with the motivational pathway of the JD-R model, we expect working conditions to be linked to work engagement at the individual level. In particular, we predict that:

Hypothesis 1. At the Individual Level, Job Resources Are Positively Associated With Work Engagement

What about job demands, those aspects of work requiring sustained physical or psychological (cognitive or emotional) effort (Demerouti et al., 2001)? The health impairment pathway of the JD-R model outlines how the effort of dealing with ongoing job demands drains energy reserves and leads to a range of physical and psychological costs. In volunteer fire-fighting, for example, the emotionally demanding nature of the work has been positively associated with psychological strain and burnout (Tuckey & Hayward, 2011). But not all job demands are created equal (Van den Broeck, de Cuyper, de Witte, & Vansteenkiste, 2010). Karasek (1979) suggested that demands “place the individual in a motivated or energized state” (p. 287). As such, they are not necessarily negative but can instead be viewed as a challenge that motivates and stimulates effort. It is only when workers must exert sustained effort to manage job demands without adequate opportunity to recover that demands become a source of strain (Meijman &

Mulder, 1998). Although there is no direct link between demands and engagement proposed in the JD-R model, sometimes a negative relationship has been found through strain (e.g., Schaufeli & Bakker, 2004), as outlined in the health impairment pathway. In contrast, here we deliberately focus on the cognitive demands of volunteer fire-fighting that (arguably) have the potential to invoke the motivational pathway, rather than draining workers’ energy stores.

Selye (1982) recognized that, despite similar physiological effects, some stressors are perceived as a challenge and are linked to feelings of fulfillment, thereby functioning as a positive motivating force. Likewise, Lazarus and Folkman (1984) described how stressors may be appraised as challenging or threatening. More recently, Cavanaugh, Boswell, Roehling, and Boudreau (2000) elaborated on this distinction, identifying two types of job demands: challenge and hindrance demands (or stressors). Challenge stressors are appraised as having the potential to promote growth and mastery, whereas hindrance stressors are appraised as a potential threat to learning, development, and goal attainment. Meta-analyses have demonstrated that challenge stressors share a positive relationship with job satisfaction and organizational commitment, a negative relationship with turnover intention and behavior (Podsakoff, LePine, & LePine, 2007), and a positive relationship with performance via increased motivation (Lepine, Podsakoff, & LePine, 2005). Hindrance stressors show the opposite pattern of relationships.

Although the link between resources and engagement is clear, theoretically and empirically, the impact of demands is less so. The challenge-hindrance distinction appears to have great utility for understanding when job demands are likely to be linked to higher levels of work engagement. A recent meta-analysis showed that job demands typically appraised as challenges were positively related to engagement, whereas demands typically appraised as hindrances had a negative association with engagement (Crawford, LePine, & Rich, 2010). An initial challenge (as opposed to hindrance or threat) appraisal is likely to activate positive emotions, intensify problem-solving efforts, and increase investment to manage the demands and, in turn, promote a heightened sense of engagement (Crawford et al., 2010).

In their meta-analysis, Crawford et al. (2010) argued that workload, time pressure, and responsibility represent challenge (rather than hindrance) demands that are perceived to provide opportunities to learn, aid goal attainment, and stimulate effort that will be rewarded. Our unpublished pilot data indicate that volunteer fire-fighters describe the cognitive demands of volunteer fire-fighting (e.g., analyzing the situation, making decisions, and solving problems) in this way; as an energizing and rewarding aspect of the role that involves the development and utilization of new skills, and as a challenge to be relished rather than a drain. Likewise, other research demonstrates that “firees” do not freely give their time only for community-oriented motives but also for self-oriented motives, such as the challenge of operational fire-fighting (McLennan & Birch, 2008), self-development opportunities (Perkins, 1989), and excitement (Perkins, 1989; Thompson & Bono, 1993). By drawing on Crawford et al.’s rationale for classifying job demands as challenges or hindrances, the results of our pilot work, and the range of motives for volunteering, we reasoned that cognitive fire-fighting demands would operate as a challenge stressor, viewed by volunteer firefighters as having the potential to promote

learning and development. As such, we expect cognitive demands to have a positive relationship with engagement.

Hypothesis 2. At the Individual Level, Cognitive Job Demands Are Positively Related to Work Engagement

Previous studies have shown that the combination of job demands and job resources adds to the prediction of engagement. Using different combinations of demands and resources, a number of studies have shown that job resources boost engagement particularly when job demands are high (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Hakanen, Bakker, & Demerouti, 2005). Conversely, when levels of job resources are high, workers have the scope to invest resources to manage demands, to take risks, and try new things so as to build-up their store of resources (cf. Hobfoll, 2002). Ultimately, under conditions of high resources, workers are best placed to successfully manage job demands. In this way, high levels of job demands provide the conditions to motivate workers for action, and high levels of job resources provide the means to carry through with the action plan (similar to the concept of active work described by Karasek, 1979).

When cognitive decision making and problem-solving demands are matched with cognitive resources, such as being able to apply intellectual skills to solve problems, the capacity to control how events are managed, and getting support from team members to tackle tricky situations, the outcome should be increased levels of work engagement. Consistent with this reasoning, Bakker, van Veldhoven, and Xanthopoulou (2010) found significant two-way interactions between workload and a variety of cognitive resources (skill utilization, learning possibilities, participation in decision making) when predicting task enjoyment and organizational commitment. The most motivating combination in all cases was high workload in combination with high levels of the resource. Additionally, in the present study, the triple match of demands and resources from the same (*cognitive*) domain predicting the *cognitive*-affective aspects of work engagement suggests a higher likelihood of observing significant interaction effects (de Jonge & Dormann, 2006). Hence:

Hypothesis 3. There Will be a Two-Way, Individual Level Interaction Between Cognitive Demands and Cognitive Resources on Work Engagement, Such that Engagement Increases with Increasing Job Resources Particularly as the Level of Job Demands Increases

Empowering Leaders Optimize Working Conditions for Engagement

So far we have covered fairly well-known territory. We turn now to the main contribution of this study—an examination of how leadership, in particular empowering leadership, influences work engagement by shaping and augmenting working conditions. We thus introduce another level in our theoretical model: the influence of empowering leadership, at the group level, on the individual level motivational processes described above. Multi-level investigations of psychological empowerment have emerged recently within the literature (e.g., Chen, Kirkman, Kanfer, Allen, & Rosen, 2007; Seibert, Silver, & Randolph, 2004).

Psychological empowerment can be conceptualized as a motivational construct: empowering others equates with motivating them to achieve as well as enabling them to do so, rather than merely delegating responsibility and authority (Conger & Kanungo, 1988). Although many studies have focused on transformational leadership, our focus here is on the behavior of leaders to empower their followers: the concept of empowering leadership. Empowering leadership essentially involves encouraging and facilitating employees to lead and manage themselves. A range of leaders, not only truly exceptional and inspirational individuals, have the potential to utilize person-oriented empowering leadership behaviors, which involve actual empowerment as well as behaviors oriented toward follower self-development (Burke et al., 2006). Representative behaviors include leaders encouraging followers to assume responsibilities and work independently, coordinate efforts with other members of the team, think about problems as learning opportunities or challenges, seek out opportunities to learn and grow, and acknowledge and self-reward their efforts (Pearce & Sims, 2002).

Empirical work distinguishes this type of leadership from directive (which relies on position power to influence followers), transformational (which is characterized by idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration; Bass, 1985; Jung & Sosik, 2002), and transactional (which involves clarifying effort-reward relationships and achieving motivation through rewards) behavioral styles (Pearce et al., 2003). In particular, while transformational leadership is broadly centered on the leader inspiring followers to identify with the leader and commit to a collective mission and vision, empowering leadership is more narrowly focused, targeting the development of follower self-leadership capabilities (Pearce et al., 2003; Tekleab et al., 2008). Although both transformational and empowering leaders may coach and mentor followers, these behaviors serve a different purpose in each style: for transformational leaders, the purpose is to consolidate leader charisma and belief in the leader; for empowering leaders, it is to teach self-leadership skills.

Earlier we outlined how work engagement arises through individual level motivational processes. Likewise, empowerment has been defined as a motivational construct. Linking these two sets of ideas, we reason that empowering leadership can play an intrinsic and an extrinsic motivational role to stimulate work engagement. Intrinsically, we propose that empowering leadership behaviors help employees meet the basic need for self-determination or control (Ryan & Deci, 2000). By encouraging followers to use self-rewards, facilitating follower self-leadership, engaging in participative goal setting, and encouraging teamwork and independent action, empowering leaders transmit power to followers (cf. Manz & Sims, 1987), and in doing so should enhance followers' capacity for self-determination and followers' feelings of mastery. Extrinsically, the outcome of a heightened sense of mastery and self-determination is enhanced motivation for task accomplishment (Conger & Kanungo, 1988). Through delegation, consultation, and support, this enhanced level of motivation is combined with the capacity to succeed and achieve work-related goals. Thus, empowering leadership at the group level should directly promote individual follower work engagement through intrinsic and extrinsic motivational processes.

Hypothesis 4: Empowering Leadership at the Group Level Will be Positively Associated With Individual Follower Work Engagement

The mediating role of working conditions. So far we have described a direct effect of empowering leadership on followers. There is a need, however, to go further by exploring and testing the *mechanisms* through which leaders influence the behaviors and cognitions of followers (Burke et al., 2006). To that end, we argue here that leaders can influence follower work engagement by shaping the work environment, in particular by optimizing working conditions in the form of job demands and job resources.

Although previous research has tended to focus on performance and motivation (e.g., Ahearne, Mathieu, & Rapp, 2005; Piccolo & Colquitt, 2006) rather than well-being, the effect of leaders on follower well-being by influencing psychosocial working conditions has received some attention. Recent studies have found a positive relationship between transformational leadership and psychological well-being via different conceptualizations of meaningful work (Arnold et al., 2007; Nielsen et al., 2008a; Nielsen, Yarker, Brenner, Randall, & Borg, 2008b) and via self-efficacy (Nielsen & Munir, 2009). Likewise, transformational leadership has been positively associated with job satisfaction, partially mediated by involvement in work (Nielsen et al., 2008b). High quality leader-member exchange has also been shown to promote individual job satisfaction by increasing structural empowerment within the work unit (i.e., access to information, access to support, access to resources needed to do the job, and opportunities to learn and grow) (Spence Laschinger, Finegan, & Wilk, 2011). One engagement-specific study has been published: Tims and Bakker (2011) found that daily transformational leadership (as perceived by workers) influenced daily work engagement, fully mediated by levels of optimism.

Looking across these studies, the mechanism via which (transformational) leadership promotes positive well-being appears to be by enhancing resources: personal resources (e.g., self-efficacy, optimism), individual job resources (e.g., meaningful work, involvement), and unit-level job resources (e.g., structural empowerment). Our research extends the study of the this mechanism in three ways: (a) by broadening the working conditions studied to include job demands and job resources; (b) by focusing on a well-being outcome directly connected to work—work engagement; and (c) by studying an alternative leadership style, empowering leadership, which can be harnessed by a range of different leaders in different settings not just truly inspirational leaders.

Empowering leaders operate by consulting, delegating, supporting, developing, and team building (Pearce et al., 2003; Yun, Faraj, & Sims, 2005). Empowering leaders seek follower input for solving problems and encourage members to participate in decision making. They delegate the management of tasks to others and encourage team members to work independently and together without direct supervision. In doing so, empowering leaders place additional (challenging) demands and responsibilities on followers, including cognitive job demands related to problem solving and decision making. This suggests a positive association between empowering leadership and follower cognitive demands.

Hypothesis 5: Empowering Leadership Behaviors at the Group Level Are Positively Related to Individual Follower Cognitive Demands

At the same time, followers are equipped by empowering leaders with the cognitive resources to deal with these additional demands. Empowering leaders provide followers with the opportunity to learn new things and develop their skills and abilities so as to carry out new responsibilities. Although task management is delegated, thereby increasing cognitive demands, the authority to make decisions and choose the way in which to approach situations is also provided. In effect, followers can operate without always getting a stamp of approval or seeking input from the leader. In this way, follower competence and autonomy, important innate psychological needs (Ryan & Deci, 2000), are supported. So although cognitive demands may be present, followers should perceive more cognitive resources to manage these demands.

Hypothesis 6: Empowering Leadership Behaviors Are Positively Associated With Individual Follower Cognitive Resources

In sum, by increasing both cognitive demands and cognitive resources, empowering leadership optimizes working conditions for the achievement of work-related goals and the development of follower competence and self-determination that, in turn, should stimulate engagement. In other words:

Hypothesis 7: The Relationship Between Empowering Leadership and Individual Follower Engagement is Partially Mediated by Individual Level Cognitive Demands and Cognitive Resources

The moderating role of leadership. Earlier we outlined that workers are best placed to successfully manage their job demands when equipped with high levels of resources. We anticipate that empowering leadership will augment the potential for such a work environment to facilitate work engagement. At the individual level, high levels of job demands can be effectively managed with abundant job resources. This effect should be boosted by an empowering leader whereby the situation and leadership style are aligned to stimulate vigor, dedication, and absorption in followers. To elaborate, empowering leaders utilize participative decision making, provide information to followers, explain their decisions, and coach them toward better problem solving and performance (Arnold, Arad, Rhoades, & Drasgow, 2000). Such leaders encourage followers to take initiative, to manage and control their own behavior, essentially, to engage in self-leadership (Yun, Cox, & Sims, 2006). Through these behaviors, empowering leaders should provide more leverage—in the form of self-determination and control—for followers to use the available resources to deal with job demands and overcome challenges. This process should help workers to transform feelings of stress into feelings of energy and interest in the work (cf. Karasek, 1979). As Manz and Sims (1987) observed, when leaders emphasize follower self-management, there is a fundamental shift of control to followers. Through this shift in control, empowering leadership should enhance the stimulating and engaging effect of being in a work situation where high levels of job demands are matched by high levels of job resources.

Conversely, when the leader does not act in an empowering way, some of the motivating potential of the work situation is lost: although job resources may be available in the work environment, these resources may not be fully utilized when followers are not empowered by their leaders to utilize them. Accordingly, we predict a cross-level three-way interaction between empowering leadership at the group level and cognitive demands and resources at the individual level on work engagement.

Hypothesis 8. The Combination of High Job Demands and High Job Resources at the Individual Level Will be Particularly Positively Related to Individual Follower Work Engagement as the Use of Empowering Leadership Behaviors by Leaders at the Group Level Increases

The theoretical model linking empowering leadership by brigade captains to volunteer fire-fighter work engagement via individual working conditions is shown in Figure 1.

Method

Participants and Procedure

A random sample of 150 brigades from the South Australian Country Fire Service (CFS) was invited to participate in the study, via a letter of invitation to brigade captains. By way of background, each CFS brigade has one brigade captain, the elected leader of the brigade. Each active fire-fighter on record from the brigades who responded to the initial invitation was sent an anonymous mail questionnaire. A brigade identifier code was included on the questionnaire to enable data matching according to brigade. The sample that returned completed questionnaires consisted of 540 volunteer firefighters (response rate = 35%) from 68 brigades (range 2–17 firefighters per brigade), as well as 68 brigade captains (response rate = 43%). The firefighters had a mean age of 44.03 years ($SD = 13.11$) and 85.7% of participants were male, which is representative of the population (see McLennan, 2004). All brigade captains in the sample were male. Their average age

was 46.59 years ($SD = 8.55$), and average tenure as captain was 16.37 years ($SD = 10.68$). Brigades in close proximity to the state capital (Adelaide) accounted for 11.7% of the sample, with the remainder being rural brigades. Distribution of brigades in the sample across different regions closely reflected that of the population of CFS brigades. Brigades responded to an average of 61 emergency incidents ($SD = 91.42$) in the financial year preceding data collection, with most brigades attending between 10 and 95 call-outs in that year. On average, the firefighters worked in their volunteer role for 27.36 hours per month ($SD = 33.86$) during the summer fire season (October–April) and 15.72 hours per month ($SD = 2.47$) outside of that time. The corresponding figures for the brigade captains were: $M = 35.76$ hours ($SD = 37.20$) per month during the fire season and $M = 22.73$ ($SD = 26.99$) at other times.

Measures

Empowering leadership was rated by brigade captains (i.e., measured at the group level) with six items from the scale developed by Pearce and Sims (2002), modified to refer to the leader's own behavior within the volunteer fire-fighting context. Items were selected in consultation with fire service leaders as best representing activities within the scope of the captain role. Captains rated the degree to which they encourage teamwork (e.g., "I urge members to work as a team with other brigade members"), independent action (e.g., "I encourage brigade members to seek out learning opportunities"), and self-development (e.g., "I urge brigade members to accept responsibilities of their own") on a 5-point scale (1 = *definitely not true*; 5 = *definitely true*).

Cognitive demands were assessed at the individual level with five items from the cognitive demands subscale of the Demand-Induced Strain Questionnaire (DISQ; de Jonge, et al., 2004). Items, such as "I have to make complex decisions" and "I must remember many things simultaneously," were rated by the firefighters on a 5-point Likert-type scale (0 = *very rarely/never*; 4 = *very often/always*).

Cognitive resources were also assessed at the individual level with five items from the relevant DISQ subscale, such as "I have the opportunity to use my intellectual skills to solve complex tasks" and

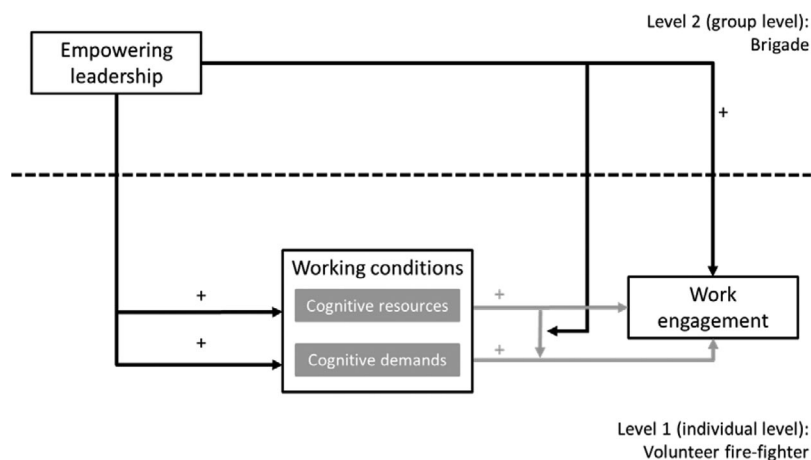


Figure 1. The theoretical model linking group level empowering leadership to individual follower work engagement via individual level working conditions.

"I have access to the information needed to solve complex tasks," rated according to the same 5-point response format.

Work engagement was assessed with the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2010; Schaufeli, Salanova, González-Romá, & Bakker, 2002) on a 7-point scale (0 = *never*; 6 = *always*). Two items were removed: one was not applicable to volunteer work ("When I get up in the morning, I feel like going to work"); the other had negative connotations, associated with working unsafely on the fire ground ("I get carried away when I'm working"). The remaining items, completed by the firefighters (i.e., assessed at the individual level), were modified to reflect the volunteer fire-fighting context (e.g., "I am enthusiastic about my volunteer work").

Statistical Analyses

To take account of the nested data structure, volunteer firefighters (Level 1, the individual level) nested within brigades (Level 2, the group level), data were analyzed via hierarchical linear modeling (e.g., Hofmann, 1997; Hox, 1995) using MLWiN 2.10 software (Rasbash, Steele, Browne, & Goldstein, 2008).

Two sets of analyses were conducted. First, we followed Baron and Kenny's (1986) three-stage mediated regression procedure and calculated: (a) the relationship between the mediators (cognitive demands and resources) and the independent variable (empowering leadership) (Hypotheses 5 and 6); (b) the relationship between the dependent variable (work engagement) and the mediators (Hypotheses 1 and 2); and (c) the relationship between the dependent variable and independent variable (Hypothesis 4), and the change in magnitude of this relationship once the mediators were added (Hypothesis 7). This sequence is represented as Models A-D. The Monte Carlo Method (MCM), a form of parametric bootstrapping, was used to generate 95% confidence intervals for the average indirect effects using 20,000 random draws from the estimated sampling distribution of the estimates (Selig & Preacher, 2008). The MCM is appropriate for multilevel models where lower-level mediation (i.e., mediation by Level 1 variables) is predicted (Bauer, Preacher, & Gil, 2006), as in our theoretical model. As outlined by Hofmann and Gavin (1998), centering decisions have important implications for hypothesis testing in hierarchical linear modeling. Following their recommendations, for this first set of analyses, we centered all variables in relation to the grand mean.

Second, we examined moderation, specifically the two-way interaction at Level 1 (Hypothesis 3) and the three-way cross-level

interaction (i.e., a Level 2 moderator of the Level 1 interaction) (Hypothesis 8), by calculating the following models in sequence in the prediction of work engagement: (Model 1) the significance of the Level 1 predictors (cognitive demands and resources); (Model 2) variation in slopes of the Level 1 predictors (to determine that there was sufficient between-groups variance in the relationships of the predictors with engagement); Model 3 the addition of the Level 2 predictor (empowering leadership); Model 4 the hypothesized two-way interaction at Level 1 between cognitive demands and cognitive resources; Model 5 controlling for all two-way interactions prior to examining the independent contribution of the three-way interaction; and Model 6 the hypothesized three-way cross-level interaction between empowering leadership, cognitive demands, and cognitive resources (Hypothesis 8). The $\Delta-2 \times \log$ statistic is presented as an indication of improvement in model fit, with the significance of these values in reference to the chi-square distribution. Given our interest in cross-level moderation, in these analyses the Level 1 predictors were centered around the group mean and the Level 2 predictor (empowering leadership) was centered around the grand mean (see Hofmann & Gavin, 1998).

Results

Preliminary Analyses

Means, standard deviations, internal consistencies (Cronbach's alpha), and intercorrelations are shown in Table 1. As can be seen, all scales showed acceptable internal consistencies. Before testing the hypotheses, we examined whether individual level work engagement differed within- and between-brigades; that is, whether there was sufficient variation at both levels in our multilevel model. A two-level intercept only model resulted in a better explanation of the data than a one-level intercept only model, $\Delta-2 \times \log = 28.12, p < .01$. We calculated the intraclass correlation based on this model, which indicated that 15% of the variance in work engagement could be attributed to between-groups differences. When age, gender, and working hours were added to the two-level intercept only model, age ($\gamma = -.007, SE = .003$), hours worked in the fire season ($\gamma = -.001, SE = .002$), and hours worked outside of the fire season ($\gamma = -.004, SE = .004$) were not significantly related to work engagement. We therefore did not control for these variables. As the majority of brigades (42 out of 68) did not have responses from firefighters of both genders, gender could not be controlled. Even so, we reran all the models

Table 1
Descriptive Statistics, Internal Consistency Reliabilities, and Correlations

Variable	<i>M</i>	<i>SD</i>	α	1	2	3	4
Brigade level (Level 2)							
1. Empowering leadership	4.13	0.44	.82		.16**	.12*	.26**
Individual level (Level 1)							
2. Cognitive demands	2.02	0.82	.89	.10		.08	.25**
3. Cognitive resources	2.49	0.62	.74	.19	.24*		.36**
4. Work engagement	3.81	0.95	.93	.38**	.40**	.52**	

Note. Correlations below the diagonal are derived from data aggregated to Level 2. Correlations above the diagonal are derived from Level 1 data.
* $p < .05$. ** $p < .01$.

Table 2
Analysis of Direct and Mediation Effects in the Prediction of Work Engagement

Model Sequence and Variables	γ	SE	<i>t</i>
Model A; DV = work engagement			
Cognitive demands ^a	.24	.05	4.80**
Cognitive resources ^a	.51	.07	7.29**
Model B; DV = cognitive demands			
Empowering leadership ^b	.27	.12	2.25*
Model C; DV = cognitive resources			
Empowering leadership ^b	.17	.08	2.13*
Model D; DV = work engagement			
D1. Empowering leadership ^b	.55	.13	4.23**
D2. Empowering leadership ^b	.45	.11	4.09**
Cognitive demands ^a	.18	.05	6.09**
Cognitive resources ^a	.50	.08	3.65**

Note. The intercept term was included in each model although the estimates are not reported. DV = dependent variable (all measured at the individual level).

^a Level 1 (individual level) predictor. ^b Level 2 (group level) predictor. * $p < .05$. ** $p < .01$.

after omitting the female firefighters from the sample and found the same pattern of results with similar parameter estimates.

Hypothesis Testing

As shown in Table 2, in Model A, individual level cognitive demands and cognitive resources both had significant positive relationships with individual follower work engagement, supporting Hypotheses 1 and 2. Hypotheses 5 and 6 were also supported based on the significant positive cross-level associations of captain (group level) empowering leadership with (individual) volunteer fire-fighter cognitive demands and cognitive resources (Models B and C). Likewise, in Model D1, the empowering leadership behaviors of brigade captains at the group level had a significant positive cross-level relationship with volunteer fire-fighter work engagement at the individual level, consistent with Hypothesis 4. Hence the preconditions for mediation were established (as per

Baron & Kenny, 1986). In a formal test of mediation, when individual level cognitive demands and cognitive resources were added to the model where group level empowering leadership predicted individual work engagement (Model D2), the coefficient for empowering leadership reduced in size but remained significant, suggesting partial mediation. The 95% confidence intervals for the simultaneous indirect effects via cognitive demands (lower = 0.02, upper = 0.08) and cognitive resources (lower = 0.02, upper = 0.27) indicate that the effect of empowering leadership on follower engagement was carried through both features of the work environment. Hypothesis 7 was thus supported.

Turning to the moderation analyses, as shown in Table 3, in Model 1 the inclusion of volunteer fire-fighter cognitive demands and resources (at Level 1) lead to a significant improvement in model fit relative to the null model. The statistics for Model 2 show that the relationships of volunteer fire-fighter work engagement with both of these working conditions varied significantly across brigades, supporting the progression in later models to cross-level moderation. The significant effect of empowering leadership (at Level 2) already noted above is again seen in Model 3. Model 4 relates directly to Hypothesis 3. We expected that the positive relationship between cognitive resources and engagement would increase in strength as the level of cognitive demands also increased. The addition of the interaction term significantly improved the fit of the model to the data. Figure 2 plots the form of the interaction. The pattern was not as expected. When cognitive resources were high, the level of cognitive demands did not have much impact on engagement, whereas when cognitive resources were low, engagement increased with cognitive demands. Thus, Hypothesis 3 was not supported.

It is important to note, however, that *all* significant main effects and interactions must be interpreted together as a system (Aiken & West, 1991; Hox, 1995). In this case, the nature of the two-way interaction is qualified by the significant three-way interaction across the levels in our multilevel model. Hypothesis 8 proposed that empowering leadership at the group level would boost the potential for a work situation of both high demands and resources at the individual level to enhance follower engagement.

Table 3
Sequential Model Testing in the Prediction of Individual Follower Work Engagement

Variables	Null		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	γ	SE	γ	SE	γ	SE	γ	SE	γ	SE	γ	SE	γ	SE
Intercept	3.78**	.06	3.76**	.06	3.76**	.06	3.80**	.06	3.80**	.05	3.80**	.06	3.78**	.05
Cognitive demands (D) ^a			.20**	.05	.20**	.06	.15**	.06	.15**	.06	.15**	.06	.14**	.06
Cognitive resources (R) ^a			.45**	.06	.47**	.08	.43**	.09	.42**	.09	.42**	.09	.38**	.09
Empowering leadership ^b							.55**	.13	.55**	.13	.55**	.14	.54**	.14
D × R									-.22*	.10	-.22*	.10	-.25**	.10
Empowering leadership × D											.17	.12	.28*	.13
Empowering leadership × R											.11	.18	.17	.18
Empowering leadership × D × R													.34*	.17
-2 × log	1448.72		1384.35		1373.41		1115.92		1111.15		1108.82		1105.03	
Δ -2 × log			64.36**		10.94*		257.49**		4.78*		2.32		3.79*	
df			2		5		1		1		2		1	

^a Level 1 (individual level) predictor. ^b Level 2 (group level) predictor. * $p < .05$. ** $p < .01$.

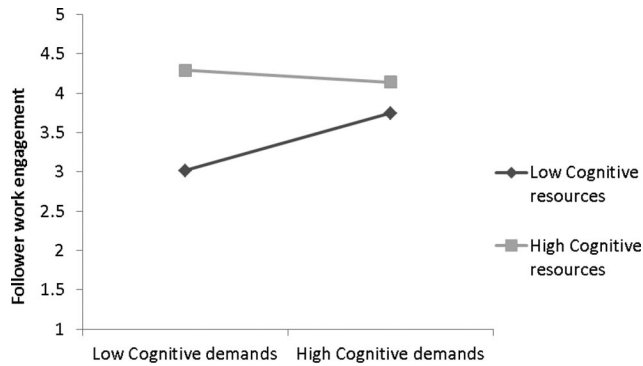


Figure 2. The interaction effect at the individual level of cognitive demands and cognitive resources on work engagement.

We found a significant three-way interaction term, the addition of which in Model 6 improved model fit over Model 5 (which included all main effects and two-way interaction terms). The form of the interaction is shown in Figure 3. The slope of each line is positive and significant at $p < .01$ (as per the interaction utilities developed by Preacher, Curran, & Bauer, 2006), and the slope of the High Cognitive Demands \times High Cognitive Resources line is significantly greater than the slopes of the other three lines (at $p < .05$), which do not significantly differ. Adding empowering leadership by brigade captains to a work situation of high levels of cognitive demands to stimulate volunteer firefighters as well as high levels of cognitive resources to manage those demands had a strong impact on engagement. Specifically, engagement increased with increases in empowering leadership, but especially so in an environment already optimized for motivation. Consistent with Hypothesis 8, the combination of high job demands and high job resources was positively related to work engagement particularly when leaders used an empowering leadership style.

Discussion

The focus of our study was on enhancing volunteer firefighter work engagement by studying the potential for empowering leadership by fire brigade captains to augment the individual level motivational processes that underpin engagement. We used multilevel modeling and combined data on leadership from captains (Level 2) with self-report measures of the work environment and engagement from volunteer firefighters (Level 1). In addition to replicating findings linking working conditions to engagement (Bakker & Leiter, 2010), our study has three unique findings: (a) empowering leadership directly inspired work engagement in followers; (b) empowering leadership had the effect of optimizing working conditions for motivation, specifically increased levels of cognitive demands and cognitive resources, in a partially mediated pathway; and (c) even when optimum working conditions for motivation were in place, in a work context characterized by high levels of both cognitive demands and cognitive resources, empowering leadership strengthened the effect of these favorable working conditions. These findings together give rise to a set of unique theoretical implications and a range of strategies to utilize them in applied settings.

Theoretical Implications

The first major theoretical implication of our findings is the importance of expanding the study of work engagement to incorporate a multilevel framework. As outlined in the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001), work engagement arises through a motivational process whereby adequate levels of job resources promote the channeling of energy into work tasks, leading employees to invest high levels of effort and become strongly involved and engrossed in their work. This pathway has been almost exclusively described and tested as an individual level phenomenon. These individual level motivational processes are, however, embedded within a broader organizational context. Potential influences on work engagement also exist within the work group and the wider organization. For example, Dollard and Bakker (2010) found that unit level psychosocial safety climate predicted an increase in engagement over time via an increase in skill discretion. Our results showed, for example, that 15% of the variance in work engagement was due to brigade level effects.

We specifically examined the influence of leader behavior on follower engagement, focusing on empowering leadership. We saw a direct effect of empowering leadership across the levels in our multilevel framework. That is, elevated levels of volunteer firefighter engagement were associated with behaviors by leaders that encouraged independent action as well as teamwork and self-development. We also found an indirect cross-level relationship between empowering leadership and follower engagement, where the effect of leadership at the group level on engagement was partially mediated by individual perceptions of working conditions. Likewise, we found evidence for cross-level moderation, where empowering leadership at the group level boosted the effect of individual working conditions to enhance engagement. Hence, our findings firmly link empowering leadership within a work group to the motivational processes underpinning work engagement in individual workers and underscore the need for a multi-level approach to thinking about stimulating employee vigor, dedication, and absorption. The body of empirical research on engagement reveals a range of important effects for workers as well as employer organizations (e.g., better performance, lower personnel turnover) (see Bakker & Leiter, 2010).

Second, our focus on the empowering behaviors utilized by leaders, rather than on employee perceptions of empowerment,

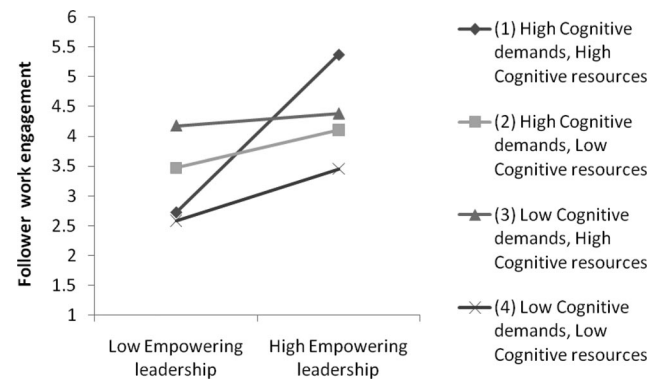


Figure 3. The three-way cross-level interaction effect of empowering leadership at the group level with cognitive demands and cognitive resources at the individual level on follower work engagement.

contributes to our understanding of the empowerment process. In particular, we saw that empowering leadership affected followers' experiences of the job to promote motivation and engagement. Previous research on psychological empowerment has centered on individual or team perceptions of feeling empowered at work—having a sense of competence, autonomy, meaning, and impact (Kirkman & Rosen, 1997, 1999; Thomas & Velthouse, 1990). We instead concentrated on the behavior of leaders in the form of empowering leadership and how these leader behaviors influenced individual perceptions of working conditions (specifically, cognitive job demands and cognitive job resources). Likewise, the research on empowering leadership has focused on performance outcomes (e.g., the quality of performance or quantity of production) and, to a lesser extent, learning (Burke et al., 2006). Our outcome of interest was instead a work-related aspect of well-being, work engagement—a positive motivational state characterized by vigor, dedication, and absorption in work. We found that empowering leadership optimized the combination of cognitive job demands and cognitive job resources for followers to achieve at work (a form of extrinsic motivation) and feel fulfilled (a form of intrinsic motivation). Thus leaders who empowered their followers by delegating responsibility, encouraging independent action as well as team work, and supporting follower self-development created better working conditions for workers. The end result was an increase in engagement.

Our results share similarities with recent work that has linked leadership to general levels of well-being or job satisfaction via personal resources, individual job resources, and work unit resources (e.g., Arnold et al., 2007; Spence Laschinger et al., 2011; Nielsen et al., 2008a, 2008b; Nielsen & Munir, 2009). Likewise, Tims and Bakker's (2011) diary study found that optimism (a personal resource) mediated the relationship between transformational leadership and work engagement. Our results also show that leaders can foster positive well-being outcomes by influencing the levels or perceptions of job resources. We extend previous research by demonstrating that job demands may also be an important ingredient in the mechanism by which leaders promote follower well-being. Our work suggests that engagement may be boosted when the empowering behaviors of leaders enhance challenge demands in particular, and when leaders boost the motivating potential of a work environment characterized by meaningful challenges matched with appropriate levels of job resources to manage these demands.

In sum, these findings shed light on some of the mechanisms involved in the empowerment process. Over 10 years ago it was established that leadership has an impact on individual and team empowerment (e.g., Kirkman & Rosen, 1999; Manz & Sims, 1987). By shifting the thinking to leader behavior and conceptualizing the influence of leaders using a multilevel approach, our findings indicate *how* leaders play an important role in follower empowerment: by creating the right work environment (in terms of *both* job demands and job resources) in which followers can thrive and, even when conditions are favorable for challenging and fulfilling work, leaders can further boost the potential for motivation through their empowering behaviors.

Third, our findings add to the growing body of research linking working conditions to work engagement. It is well established that job resources promote engagement. As outlined by the JD-R model, a resourceful work environment fosters vigor, dedication,

and absorption by motivating workers to achieve goals and meeting basic needs for autonomy, competence, and relatedness. Our research with volunteer firefighters is consistent with many studies from various paid employment occupations finding this link (for a meta-analysis, see Halbesleben, 2010). Few studies, however, have examined working conditions in volunteer roles and/or volunteer engagement and our study contributes to this gap. Lewig et al. (2007) published the first study regarding the utility of the JD-R model for volunteer workers. Rather than engagement, their study found a positive association between job resources and connectedness (defined as perceptions of interesting and important work, and feeling appreciated, respected, and connected). As far as we know, ours is the second study of the motivational pathway of the JD-R model in a volunteer work context and our findings support the widespread utility of these motivational mechanisms.

We also predicted and observed a positive relationship between cognitive job demands and engagement. Drawing on Karasek's (1979) original definition of demands and the more recent body of literature on challenge and hindrance stressors, we reasoned that some demands, such as the cognitive demands of the volunteer fire-fighting role, could be motivating and challenging rather than draining. Given the recent meta-analysis (Crawford et al., 2010), which reported a positive relationship between engagement and challenge demands (and a negative relationship between engagement and hindrance stressors), scholars will need to give further thought to the role of different types of job demands in promoting (rather than harming) work engagement and other aspects of well-being. This distinction may help to form new predictions regarding when different types of job demands are healthy and when they are likely to be harmful for workers.

Finally, we observed a significant two-way interaction between cognitive demands and cognitive resources in the prediction of engagement. Previous research has demonstrated that job resources acquire salience when job demands are high (e.g., Bakker et al., 2007; Hakanen et al., 2005). In contrast, in our study, cognitive (challenge) demands appeared to acquire salience when cognitive resources were low; that is, cognitive demands compensated for low levels of cognitive resources to help increase engagement. When cognitive resources were high, however, there was less scope for the motivating effect of cognitive demands. Given that the job demands studied in interaction with job resources to predict engagement have typically been hindrance demands, our finding may reflect our investigation of a challenge demand, which further emphasizes the need to distinguish different types of job demands in the prediction of work engagement. Or it may be unique to our sample and work context, which is a question for future research. In any case, the two-way interaction was qualified by the three-way interaction (discussed above) so it would be a mistake to overemphasize it (cf. Aiken & West, 1991).

Practical Implications

We set out to examine whether leaders could enhance follower engagement and found overwhelming support for the role of leadership in the engagement process, via working conditions. Working conditions, especially job resources, are the "known" determinants of vigor, dedication, and absorption in workers. Job demands and job resources can be modified by primary prevention initiatives—job (re)design strategies that aim to optimize the psy-

chosocial work environment with the benefit of greater work engagement. Our results, however, open up *new* pathways for organizations to promote engagement, leading ultimately to a happier and healthier workforce. In particular, organizations should not underestimate the role of leaders for shaping the work environment to enhance worker well-being, not just for increasing productivity, improving performance quality, and stimulating motivation. The good news is that leaders can exert a big impact on follower engagement. Our study shows that leaders can influence existing working conditions as well as interact with the work environment to determine how the work is actually experienced by workers. In particular, to promote work engagement, organizations should be interested in leaders who support followers to assume responsibility, encourage them to find solutions without always getting a stamp of approval, urge team members to work with each other without direct supervision, and push them to seek out learning opportunities.

There are two broad options to achieve this end. First, organizations can identify people who are likely to act in ways to empower others and place these people in leadership roles. A variety of methods may be suited to this purpose. For example, simulation exercises could be used as part of the selection process. Likewise, the use of behaviorally anchored rating scales for performance appraisal could identify prospective empowering leaders from within the existing employee base. Second, organizations can develop existing leaders, or those with leadership potential, so that they can effectively adopt an empowering leadership style. Field (e.g., Barling, Weber, & Kelloway, 1996; Starlicki & Latham, 1996, 1997) and laboratory (e.g., Howell & Frost, 1989) studies have shown that specific leadership behaviors can be acquired through training, in turn affecting follower attitudes and performance. Behavioral modeling, via videotape for instance, may be a useful training tool for leader development, particularly for training leaders in a set of behaviors linked by a cognitive template or schemata (Manz & Sims, 1986). Alternatively, a leadership training program based on action theory may also be fruitful. Action training (e.g., Frese, Beigel, & Schoenborn, 2003) involves: (a) developing a mental model of effective principles for action in given situations; (b) learning by doing, such as via role-plays, rather than by observation; (c) harnessing the experience of not reaching the desired standard to drive learning, utilizing errors and weaknesses as a source of improvement; and (d) providing extensive feedback on behavior from a functional perspective. This approach aims to maximize the transfer of skills to the real world and minimize the likelihood of falling into old routines.

These recommendations have particular salience for volunteer fire agencies facing a crisis of volunteer numbers. In volunteer firefighting, leadership roles are typically filled by election rather than through a comprehensive selection process. Leadership training, as described above, would be useful in this context. As well, creating clear position descriptions, which emphasize empowering leadership in addition to specialist technical skills and experience in firefighting, could supplement the election process. The outcome should be a volunteer firefighting workforce who are more dedicated, energetic, and committed.

Strengths, Limitations, and Future Directions

We utilized a form of data linkage, combining a measure of empowering leadership behaviors from brigade captains at the

group level with assessments of demands, resources, and engagement provided by individual firefighters. Thus a particular strength of our design was that information came from two different sources, thereby eliminating concerns about common method in relation to the observed effects of empowering leadership. Likewise, we were able to look at two different organizational layers to enhance our understanding of the motivational processes underpinning engagement.

On the other hand, we must also consider factors that limit the conclusions we can draw from these data. Although we have talked in terms of a causal pathway from leadership directly to engagement and via working conditions, our use of a cross-sectional design does not permit conclusions about the causal order of variables, merely their associations. In particular, the best test of mediation would take place across at least three timepoints (Cole & Maxwell, 2003). Repeated measurements in a longitudinal design or experimental studies that train empowering leadership would help to address this issue. We must also consider the implications of the sample in which the hypotheses were tested. Specifically the data pertain to volunteer firefighters. Despite evidence for the existence of the same psychological processes underpinning engagement, as outlined in the JD-R model, the findings may not generalize to other volunteer samples or samples of paid workers. This is largely an empirical question that can only be answered by replication studies. Furthermore, when examining these relationships in other samples, researchers should study those aspects of working conditions of particular salience to the occupation in question, as each occupation has its own specific factors that contribute to well-being (Bakker & Demerouti, 2007). The response rate was also relatively low. It is common for volunteers to remain “on the books” even after they have ceased to be an active member. Hence, it is likely that a number of surveys were sent to volunteers who had already withdrawn (but not formally resigned from) the organization, meaning that the true response rate was higher. Nonetheless, it is possible that those volunteers who responded were the ones most engaged in their fire service work. We need to be aware that the pattern of findings may be different for less engaged workers. Finally, although multiple information sources was a strength of the study, the self-reports of empowering leadership behaviors (by the leaders) may have been characterized by some degree of social desirability or self-illusions regarding leadership capacity. Indeed, the mean level of empowering leadership in the sample of brigade captains was relatively high. Even so, we found consistent support for the relationships predicted by the theoretical model we developed, allaying some concerns about validity. In the future additional insight could be provided by gathering data on the empowering behaviors enacted by leaders as perceived by followers.

In addition to the avenues highlighted above, future research could expand the study of empowering leadership behaviors and differentiate between the effectiveness of the variety of behaviors that characterize of empowering leadership. We focused on encouraging independent action, team work, and self-development. Studies could look at other aspects of empowering leadership, such as encouraging followers to look for opportunities in problems (opportunity thinking), encouraging followers to monitor and reward their own performance (self-reward), and working together with followers to make decisions

(participative decision making). It is possible that different aspects of empowering leadership are linked to different consequences for follower work engagement, well-being, and performance, and that different psychological processes are in play.

It would also be fruitful to explore how work characteristics, personal resources, and innate psychological needs are related. Our earlier arguments suggested that, by shaping working conditions, empowering leaders support followers' basic needs for competence and autonomy. These needs have been identified as the keys to intrinsic motivation (Ryan & Deci, 2000). Likewise, studies have demonstrated that transformational leaders can augment followers' personal resources (e.g., Nielsen & Munir, 2009; Tims & Bakker, 2011). A two-phase mediation process may thus be involved, where leaders shape perceptions of work that in turn foster personal resources or innate needs. Alternatively, followers may only be able to utilize additional job resources to manage challenge demands when their innate needs are supported by empowering or transformational leaders. These possibilities deserve further study as they relate directly to the mechanisms via which leaders impact on followers' experiences of work and follower well-being.

Conclusion

Our study has shown that not only do working conditions stimulate motivation processes to enhance work engagement, group level factors, such as leadership, are also likely to play an important role. Leaders can directly inspire engagement, as well as optimize working conditions to enhance vigor, dedication, and absorption. Our findings suggest that the process through which leaders can empower workers and enhance well-being is through their influence on and interaction with follower working characteristics (job demands, particularly challenge demands, and job resources). To more fully understand the development and maintenance of work engagement, worthy goals for future research will be to examine other potential influences from the work group and wider organization, and to further explore the mediating processes involved.

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