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Leadership development as an intervention in occupational health psychology

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A growing body of literature suggests that organizational leadership is linked to a wide variety of employee outcomes, both positive and negative, relevant to occupational health and safety. All organizations have individuals in a leadership role, but few researchers consider leadership training as an effective intervention. This may be because such studies are difficult to conduct and because the target, being the employees, is indirect. In this paper for the special edition of *Work & Stress*, we review studies linking leadership to individual well-being and safety in organizations. These include studies concerning leadership style, abusive supervision and organizational fairness. We highlight intervention studies that suggest that these linkages are causal and that leadership development, usually in the form of training, is an effective intervention in occupational health psychology. It is proposed that leadership development should be a main target for research on interventions in Occupational health psychology. The characteristics of leadership development interventions and directions for future research are discussed.

Keywords: leadership; training; interventions; supervision; justice; well-being; work-related stress

Introduction

The observation that leadership has an effect on individual well-being would come as no surprise to any working adult (Gilbreath, 2004). What might be surprising, however, is the breadth of the effects (Mullen & Kelloway, 2011). The quality of leadership has been linked to an array of outcomes within occupational health psychology: positive outcomes such as psychological well-being (e.g., Arnold, Turner, Barling, Kelloway, & McKee, 2007), and organizational safety climate (e.g., Zohar, 2002a) and negative outcomes, including employee stress (e.g., Offermann & Hellmann, 1996), cardiovascular disease (e.g., Kivimaki et al., 2005; Wager, Feldman, & Hussey, 2005), workplace incidents and injuries (e.g., Barling, Loughlin, & Kelloway, 2002; Kelloway, Mullen, & Francis, 2006; Mullen & Kelloway, 2009) and health-related behaviours such as alcohol use (e.g., Bamberger & Bacharach, 2006). In short, virtually every outcome variable in the field of

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occupational health psychology is empirically related to organizational leadership (Mullen & Kelloway, 2011).

Moreover, data are starting to emerge suggesting that improving organizational leadership results in improved safety outcomes (see, for example, Mullen & Kelloway, 2009; Zohar, 2002a) and enhanced employee well-being (McKee & Kelloway, 2009). Despite these data, discussions of occupational health and safety interventions (e.g., Burke & Sarpy, 2003) only rarely consider leadership training as an occupational health and safety intervention. In this article, we review the empirical evidence for the suggestion that leadership development should be considered as a viable and effective primary intervention in occupational health psychology.

We then consider the unique nature of leadership development – unlike most interventions in occupational health psychology, leadership development is *not* primarily intended to affect the experience and behaviour of individuals who participate in the intervention – rather, the intention of leadership development is more typically to affect those who do not participate in the intervention (i.e., subordinates or employees). Indeed, the design and evaluation of leadership interventions is further complicated by the fact that indirect and delayed effects would be of primary interest. This characteristic poses practical difficulties in designing and showing the effectiveness of leadership development interventions.

Defining leadership

Establishing and discussing the potential for leadership development as an occupational health psychology intervention requires, in the first instance, a commonly understood definition of the word leadership. Offering such a definition is a daunting task. As Stogdill (1974, p. 259) noted some 35 years ago “there are almost as many definitions of leadership as there are persons who have attempted to define the concept”; synthesizing this vast literature to derive a single definition is a task well beyond the scope of this review.

Yukl's (2006) distinction between leadership as a specialized role and leadership as a shared influence process offers a way forward. He notes that the term “leadership” is used in two fundamentally different ways. First, all organizations have formal “leadership” roles (e.g., managers, supervisors) that have specialized, non-shared functions; in organizations, individuals can be described as “leaders” or “followers.” He also notes that leadership is often used to describe a process of social influence – in this view anyone in a group can demonstrate leadership. Much of what is labelled “leadership research” has focused on identifying the behaviours or “styles” that constitute effective social influence (for a review see Barling, Christie, & Hopton, 2011).

For our purposes, we define leadership as constituting a process of social influence that is enacted by designated individuals who hold formal leadership roles in organizations. Although we do not mean to imply that leadership as social influence is limited to the formal leaders of an organization, we do mean to suggest that those in formal leadership roles have a particularly strong potential to affect outcomes relevant to occupational health psychology. Indeed, we would go as far as to suggest that the relationship with one's formal leader in an organization is one

of the most important workplace relationships with implications for individual well-being.

The relationship with the formal leader is particularly important for several reasons. First, formal leaders in organizations serve as models for others in the organization. Leaders, for example, model safe or unsafe working procedures with consequences for followers' willingness to engage in safe work practices (Cree & Kelloway, 1997). Second, as individuals who possess formal power within the organization, formal leaders are in a position to reward or punish followers. As a result, the way in which leaders interact with their subordinates assumes a greater importance for follower well-being. Third, and relatedly, formal leaders often make decisions that create additional stressors for their followers. For example, leaders assign tasks to others and can do so in a way that increases or diminishes the followers' experience of role overload. In this sense formal leaders can be a "root cause" of organizational stress (Kelloway, Sivanathan, Francis, & Barling, 2005).

Thus, for the purpose of this review we focus on the role of the formal leader. More specifically, we focus on the way in which formal leaders interact, treat or behave towards their followers. As will be noted, much of the empirical literature examining leaders' treatment of followers has emerged in a variety of domains including studies of leadership style, abusive leadership and organizational injustice. Adopting a broad perspective on leadership allows us to draw on relevant findings from all of these domains to focus on the way in which formal leaders behave towards their followers.

This is an appropriate focus in that data linking the quality of leadership to other individuals' well-being has been available for almost 50 years (e.g., Day & Hamblin, 1964), and evidence linking poor leadership to impaired well-being in followers is particularly well-established (for a review see Kelloway et al., 2005). These effects are far-reaching, and include effects on both employee health and employee safety.

Leadership and employee psychological health

There is consistent evidence linking leadership in organizations to the psychological well-being of employees, including outcomes related to both ill-health (e.g., stress, strain) and more positive conceptualizations of health (e.g., positive moods). In their meta-analysis of 27 empirical studies, Kuoppala, Lamminpaa, Liira, and Vainio (2008) reported moderately strong (i.e., Median Risk Ratio of 1.40; Median subsample correlation of .26) relationships between different dimensions of leadership (considerate, supportive and transformational leadership) and enhanced job well-being (e.g., lower anxiety, job stress, and depression) with most of the empirical data addressing the relationship between poor leadership and impaired psychological well-being. Leadership was also shown to be associated with more objective indices such as usage of sick leave (Median Risk Ratio of 0.73) and disability pensions (Median Risk Ratio of 0.46). Although the meta-analysis included both cross-sectional and prospective studies, most of the data for the study came from cross-sectional studies.

In their systematic review of the literature, Skakon, Nielsen, Borg, and Guzman (2010) found support for their hypothesis that leader behaviours, specific leadership styles and the relationship between leaders and their employees were all associated

with employee stress and affective well-being. The available research also offers considerable guidance as to the specific aspects of leadership that might result in impaired employee psychological well-being. Broadly speaking, most of the empirical literature has focused on either some aspect of leadership style (e.g., abusive, passive or positive leadership), or on employee perceptions of leaders' fairness.

Abusive leadership

A well-developed stream of research links abusive supervision in particular with diminished job satisfaction and increased employee distress (Tepper, 2000). Defined as the employees' perception that the leader is engaging in a "sustained display of hostile verbal and non-verbal behaviours, excluding physical contact" (Tepper, 2000, p. 178), abusive leadership manifests itself in the public ridiculing of subordinates, blaming subordinates for mistakes they did not make (Tepper, Duffy, & Shaw, 2001) and the use of derogatory names and intimidation (Keashly, 1998).

Abusive supervision has been empirically linked to impaired well-being manifested as burnout (Grandey, Kem, & Frone, 2007), feelings of helplessness (Ashforth, 1997), diminished levels of self-efficacy (Duffy, Gangster, & Pagon, 2002), self-esteem (Burton & Hoobler, 2006), affective commitment to the organization (Tepper, 2007), and increased employee strain (Harvey, Stoner, Hochwarter, & Kacmar, 2007).

There is a striking parallel between accounts of destructive leadership and descriptions of workplace bullying. Indeed, several authors have drawn the parallel, arguing that destructive leaders are workplace bullies (e.g., Ferris, Zinko, Brouer, Buckley, & Harvey, 2007; Harvey, Buckley et al., 2007). Hauge, Skogstand, and Einarsen (2007) provided empirical support for this suggestion in their study of a representative sample of Norwegian workers. Their results showed that tyrannical (and laissez-faire) leadership styles were related to workplace bullying. As a result of their analyses, the authors suggest that bullying is more likely in environments characterized by tyrannical leadership, and is particularly prevalent when supervisors do not intervene to prevent and manage bullying (Hauge et al., 2007). This latter finding might provide some indication for effective interventions.

Transformational leadership

Although the existing research has focused almost exclusively on negative or poor leadership (for a review see Kelloway et al., 2005), data are now emerging suggesting that more positive forms of leadership have a beneficial effect on individual well-being. At one level, there is an extensive body of research on the effects of the amount and quality of support from managers (see for example, Halbesleben, 2006). These data show that managerial support has been linked with lower levels of perceived stress, job strain, burnout and depression (e.g., Lee & Ashforth, 1996; Moyle, 1998; Rooney & Gottlieb, 2007; Van Dierendonck, Haynes, Borrill, & Stride, 2004).

Consistent with these findings, there is a growing body of literature focusing on the effects of transformational leadership on individual well-being. Transformational leadership theory is the single most widely studied leadership theory (Barling et al., 2011) and there is an extensive body of literature documenting the

performance-related effects of transformational leadership (e.g., Barling, Weber, & Kelloway, 1996; for a review see Barling et al., 2011).

Transformational leadership is defined in terms of four particular types of behaviours. *Idealized influence* takes place when leaders do what is proper and ethical rather than what is effortless, and when they are guided by their moral commitment to their followers and go beyond the interests of the organization. Leaders exhibiting *inspirational motivation* inspire their employees to achieve more than what was once thought possible by setting high standards and articulating a vision of what can be achieved. Leaders who manifest *intellectual stimulation* help employees to question their own commonly held assumptions, reframe problems, and approach matters in innovative ways. Finally, *individual consideration* occurs when leaders pay special attention to the employees' needs for achievement and development; they provide needed empathy, compassion and guidance that employees may seek for their well-being. Although there is a considerable evidence for the performance effects of transformational leadership, researchers have now begun to extend their analyses to consider the health-related effects of transformational leadership.

Sosik and Godshalk (2000) found that transformational leadership behaviour (e.g., social support provided through mentoring – a form of individualized consideration) indirectly predicted reduced job-related stress. Furthermore, mentoring functions received by protégés moderated the link between transformational leadership and stress, such that the relationship was stronger for the sample that received high mentoring functions.

Using an experience sampling methodology and within-person analyses, Bono, Foldes, Vinson, and Muros (2007) examined effects of transformational leadership on stress and satisfaction at work. As would be expected, participants experienced greater optimism, happiness and enthusiasm when their supervisor engaged in transformational leadership behaviours, compared to employees who did not.

Arnold et al. (2007) also present evidence that leaders' transformational leadership was associated with employee well-being. In two studies, they showed that this effect was mediated by employee's sense of meaningful work. Similarly, Nielsen and her colleagues (Nielsen, Yarker, Brenner, Randall, & Borg, 2008) found that the link between leadership and well-being was partially mediated by perceptions of work characteristics (i.e., involvement, influence and meaningful work). Importantly, these results were replicated and clarified in a subsequent longitudinal extension of the original study (Nielsen, Randall, Yarker, & Brenner, 2008). The longitudinal data supported perceived job characteristics as a mediator between transformational leadership and well-being.

Although the currently available data support perceptions of the job as a mediator, there is also some support for other mechanisms. For example, transformational leaders also positively influence employee psychological well-being by evoking positive emotions through their interactions with subordinates (Bono et al., 2007).

More recently, McKee and colleagues (McKee, Kelloway, Driscoll, & Kelley, 2009) showed that perceptions of transformational leadership predicted both employees' sense of workplace spirituality and employee well-being. Spirituality was defined as the experience of meaningful work, a sense of community in the workplace and shared values between the individual and the organization.

In addition to being a predictor of well-being, workplace spirituality mediated the relationships between transformational leadership and individual well-being.

Importantly, there are some emerging data suggesting that changes in leadership result in changes in follower well-being. McKee and Kelloway (2009) reported on a field experiment examining the effects of leadership development. Participant leaders were randomly assigned to either a development (i.e., workshop and feedback, Barling et al., 1996; Kelloway, Barling, & Helleur, 2000) or a control group. Comparison of pre-test and post-test data from subordinates showed that (a) the leadership intervention was successful in enhancing subordinate perceptions of supervisory transformational leadership style, (b) enhanced perceptions of leadership were associated with individual psychological well-being and (c) the experience of workplace spirituality mediated the relationship between transformational leadership and individual well-being.

Leadership and employee physical health

Again, the positive effects of leadership style on well-being extend beyond psychological measures to include effects on physical health. For example, having a supportive supervisor was associated with lower systolic blood pressure among a sample of New York City traffic enforcement agents (Karlín, Brondolo, & Schwartz, 2003). In their analysis of prospective data from the Swedish WOLF study, Nyberg et al. (2009) present results suggesting that the effects of leadership style on individual well-being are also manifested in terms of physical health.

Good leadership style (defined as “consideration for individual employees, provision of clarity in goals and role expectations, supplying information and feedback, ability to carry out changes at work successfully, and promotion of employee participation and control,” Nyberg et al., 2009, p. 51) at time one was related to subsequent ischemic heart disease in employees, such that higher scores on leadership were associated with reduced risk of heart disease. These results held up even after controlling for a host of “traditional” risk factors such as smoking, exercise and blood pressure. Moreover, the strength of the relationship between leadership and heart disease was stronger the longer the individual had worked in the same workplace (and presumably was exposed to the same type of supervision). The authors articulate the main message of their paper as “There is a prospective dose-response relationship between concrete managerial behaviours and ischemic heart disease among employees” (Nyberg et al., 2009, p. 55), and note the potential for leadership development to be a primary means of health promotion in the workplace.

Leadership and health-related behaviours

In addition to the focus on health outcomes, research that has examined health-related behaviours has also drawn a link with leadership style. For example, supportive leadership enhanced the success of a “broad band” organizational health promotion programme designed to reduce obesity, smoking and alcohol use (Whiteman, Snyder, & Ragland, 2001) as well as programmes focused specifically on single behaviours such as smoking cessation (Eriksen, 2005). It is becoming

apparent that leaders' support of programmes may be a critical determinant of the success of health promotion interventions in organizations.

This conclusion is enhanced by an experimental study aimed at investigation the influence of leaders in increasing vaccination among health care employees (Slaunwhite, Smith, Fleming, Strang, & Lockhart, 2009). Rather than focus on formal leaders (i.e., supervisors, managers), the authors identified key members (called "champions") in health care units. Champions were selected by a nomination process in which supervisors were asked to nominate one individual from each participating unit who "operated in a front-line capacity and were well-liked by coworkers...who were viewed as a leader in their department...that coworkers trusted, who were committed to the follow through on the study and willing to promote and encourage co-workers to accept influenza vaccination." (Slaunwhite et al., 2009). Champions received a one-day information session on the importance of vaccination. Comparison of data from 23 units with champions with a control group (23 units without champions) showed a significantly higher rate of vaccination in the experimental group. Moreover, drawing on archival data, the authors demonstrated a significant 10% increase in vaccination rates among the units with champions, with only a modest non-significant change in the control group units.

Although data support the positive effects of supportive leadership on desired health-related behaviours, there are also compelling data suggesting that poor leadership results in more risky behaviours. Bamberger and Bacharach (2006) showed a link between abusive supervisory behaviour and subordinate problem drinking, including the increased occurrence of feelings of guilt associated with drinking, feelings that drinking behaviour should be reduced, having the first drink in the morning and feeling annoyed when criticized about drinking behaviour (Bamberger & Bacharach, 2006).

Leader injustice and physical health

Consistent with these findings, a great deal of recent data has emerged showing that leaders' unfair treatment of employees is associated with adverse outcomes for employees. In their meta-analysis, Colquitt et al. (2001) reported moderately strong relationships between perceptions of organizational justice and measures of context-specific mental health (Warr, 1987) such as job satisfaction and organizational commitment. For both criteria, procedural and distributive injustice was the strongest predictors. We suggest that these findings have implications for leadership in that it is the organizational leaders who make (distributive) justice and implement (procedural) justice in organizations. More direct evidence linking leaders' behaviour and organization injustice comes from a series of prospective studies conducted by Kivimaki and his colleagues (Kivimaki, Elovainio, Vahtera, & Ferrie, 2003; Kivimaki et al., 2005) that have identified procedural (organizational) and relational (supervisory) injustice as predictors of minor psychiatric morbidity as well as sick absence. In the well-known Whitehall II studies data have also emerged suggesting the importance of supervisory injustice as a predictor of psychiatric morbidity (Ferrie et al., 2006). These findings are consistent with decades of research that highlight the importance of process fairness in organizations. The effects of supervisory injustice on well-being are not limited to psychological outcomes.

Rather, a growing body of literature points to empirical links between supervisory injustice and a wide range of health-related outcomes including heavy drinking (Kuovonen et al., 2009), impaired cardiac regulation (Elovainio, Kivimaki et al., 2006), and use of sick time (Kivimaki et al., 2003).

While social scientists may be sceptical about the magnitude or clinical implication of these effects, it is worth noting that studies have consistently documented an association between supervisory injustice and mortality from cardiovascular mortality (see for example, Kivimaki et al., 2003, 2005). In one prospective cohort study, employees reporting more favourable experiences of justice at work had a 45% lower risk of cardiac death than respondents reporting lower levels of justice (Elovainio, Leino-Arjas, Vahtera, & Kivimaki, 2006). These data are consistent with a growing literature showing the positive effect on the cardiovascular system of supportive and fair social interactions (see Heaphy & Dutton, 2008 for a review), including effects on both systolic and diastolic blood pressure (Brondolo et al., 2003; Wager et al., 2003), and strengthened immune systems (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002).

In an interesting field study, Sparr and Sonnentag (2008) suggested that fairness and style of leadership may be related to employee well-being. Specifically, they found that the fairness of performance feedback was related to employee well-being (as measured by depression, job satisfaction and perceptions of control), but that some of these relationships were mediated by the quality of leader-member exchanges. Leader-member exchange theory (Gerstner & Day, 1997) focuses on the relationship between leaders and followers rather than solely on leaders' behaviour as do theories of abusive or transformational leadership. Thus, the findings of Sparr and Sonnentag (2008) are consistent with a model wherein leader behaviour (i.e., the fairness of performance feedback) influences follower well-being by influencing the quality of the relationship between leaders and followers.

Leadership and occupational safety

As is the case with health outcomes, a large and consistent body of literature has emerged documenting the relationship between organizational leadership and safety outcomes. In particular, the available evidence seems to support a direct link between leaders' behaviour and psychological or behavioural aspects of safety. In turn, the psychological and behavioural aspects of safety seem to mediate the relationship between leaders' behaviour and safety outcomes such as incidents or injuries (see for example, Barling et al., 2002).

Data consistently support the relationship between transformational leadership behaviours and perceived safety climate within organizations (Barling et al., 2002; Hofmann & Morgeson, 1999; Kelloway et al., 2006; Mullen & Kelloway, 2009; Zohar, 1980; Zohar, 2002; Zohar & Tenne-Gazit, 2008). These associations should not be unexpected in that safety climate has been defined in terms of the perceptions of leaders' behaviour – that is, as the “shared perceptions of managerial policies, procedures and practices” (Zohar, 2002, p. 75) relating to safety – and it is a small leap to assume that leaders who are seen as promoting safety would also create a positive safety climate among their followers. In their review, Flin, Mearns,

O'Connor, and Bryden (2000) found that perceptions of management were the most common dimension assessed in measures of safety climate.

Zohar (2000) found that climate perceptions were related to supervisory practices as opposed to organizational policies and procedures concerning safety. In a subsequent study, he found that the negative relationship between transformational leadership and occupational injuries was mediated by three safety climate variables, including the extent to which supervisors took preventative action, the extent to which supervisors were reactive to safety issues, and finally, the supervisor's prioritization of safety (Zohar, 2002). Zohar and Tenne-Gazit (2008) also found that transformational leadership was associated with perceptions of safety climate, although the relationship was mediated by the density of the communication network. Over all, the available literature draws a clear link between leaders' transformational leadership and perceptions of safety climate.

Researchers have also demonstrated the positive effects of supportive leadership on task (e.g., safety compliance) and contextual (e.g., safety participations) safety performance (e.g., Barling et al., 2002; Hofmann & Morgeson, 1999; Kelloway et al., 2006). For example, Mullen (2005) found that employees reported a greater willingness to voluntarily raise safety concerns (e.g., safety participation) when supervisors were perceived as supportive and likely to listen to their concerns. Hofmann, Morgeson, and Gerras (2003) found that high-quality social exchanges between leaders and employees resulted in expanded role definitions (e.g., employees perceived safety as part of their job responsibilities), which in turn, predicted employee safety citizenship behaviour. The link between high-quality leader social exchange and employee safety role definitions was moderated by employee perceptions of safety climate.

Mullen and Kelloway (2009) reported on a field study in which health care managers were randomly assigned to one of three conditions; safety-specific transformational leadership training, general transformational leadership training and a control group (no training). They showed that both leaders' safety-related attitudes and behaviours and employees' safety-related attitudes and outcomes were positively influenced by the safety specific management training. Specifically, safety attitudes and outcomes were enhanced for both leaders and employees when the leaders were trained in safety specific transformational leadership.

Kelloway et al. (2006) argued, and empirically demonstrated, that managers who exhibit passive forms of safety leadership – for example, management-by-exception (passive), and *laissez faire* – adversely affect safety outcomes. They suggest that passive leaders who do not talk about safety in effect communicate the message that safety is not important. In turn, employees believe that safety is not valued in their organization, resulting in negative safety behaviour and increased injury rates (e.g., see Zohar, 2002a; Zohar, 2002b). In the Kelloway et al. (2006) study, passive leadership accounted for significant incremental variance in safety consciousness, safety climate, safety-related events, and injuries, beyond that explained by transformational leadership. More recently, Teed, Kelloway, and Mullen (2008) examined the effects of inconsistent leadership on employee safety outcomes (e.g., when leaders display both transformational and passive leadership behaviours). Passive leadership moderated the relationship between transformational leadership and the safety outcomes employee safety citizenship behaviour, and employee safety

attitudes. These results suggest that better safety outcomes are achieved when leaders are consistent champions of safety.

Relative to data linking health outcomes to negative leadership in organizations, much less empirical attention has focused on the effects of negative leadership on safety outcomes in organizations. Conceptually, reactance theory (e.g., Brehm & Brehm, 1981) suggests that employees who perceive leaders as being bullying or unsupportive of individual safety may retaliate by withholding voluntary extra-role safety behaviours, thereby restoring a sense of justice. Empirically, some evidence for a link between abusive supervisory behaviour and safety may be suggested by data linking role overload (e.g., Barling et al., 2002) or job insecurity (Probst, 2002) to adverse safety outcomes.

More direct evidence emerges from a series of studies conducted by Mullen. First, in her qualitative investigation of why workers engaged in unsafe behaviours, Mullen (2004) identified abusive leadership as a key determinant of employee unsafe behaviour. Specifically, she identified instances in which managers coerced and intimidated participants into performing unsafe tasks. Also, both supervisors and coworkers would tease or mock individuals displaying an “excessive” concern for safety – and thereby decreased safe behaviours. In a subsequent study, Mullen and Fiset (2008) developed and empirically validated a model proposing that abusive supervision negatively impacts on employee safety participation and psychological health. Moreover, the link between abusive supervision and safety participation was fully mediated by employee perceptions of safety climate.

There are also some preliminary indications that supervisory justice may be related to safety outcomes. Gatién, Fleming, Slaunwhite, and Wentzell (2009) reported that the way in which supervisors respond to health and safety issues (framed as distributive, procedural, and interpersonal fairness) emerged as a predictor of employee safety-related perceptions in samples of construction crane operators. Procedural and interpersonal justice alone accounted for more than 50% of the variance in perceptions of safety climate. Although more data are needed to document these associations, this must be cautiously regarded as a promising line of enquiry.

Leadership development as an intervention

As the foregoing review attests, there is a substantial body of literature linking organizational leadership to occupational health psychology outcomes. Several authors (e.g., Nyberg et al., 2009) have noted the potential for leadership development to constitute a workplace health intervention, and we have reviewed several field experiments (e.g., McKee & Kelloway, 2009; Mullen & Kelloway, 2009; Slaunwhite et al., 2009) that suggest that this is a viable approach to enhancing occupational health and safety in organizations.

Drawing on public health terminology, Hurrell (2005) delineated primary, secondary, and tertiary modes of intervention. *Primary* interventions are focused on reducing or eliminating the stressors (Hurrell, 2005; Quick, Quick, Nelson, & Hurrell, 1997). *Secondary* interventions focus on changing the individual's reactions to being exposed to work stressors. Finally, *tertiary* interventions represent a “heal the wounded” approach in which the focus is to treat individuals who have developed

strain reactions (Quick et al., 1997). In this context, leadership development appears to be a promising means of primary intervention that is focused directly on the improvement of workplace conditions that lead to occupational health and safety outcomes.

Generally thought to be the most effective approach to dealing with work stress (Kelloway & Day, 2005), primary interventions can be divided into two basic categories (1) psychosocial interventions; and (2) socio-technical interventions (Parkes & Sparkes, 1998). As noted by Hurrell (2005), psychosocial interventions “focus *primarily* on human processes and psychosocial aspects of the work setting and aim to reduce stress by changing employee perceptions of the work environment” (p. 624). In contrast, socio-technical interventions “focus *primarily* on changes to objective work conditions” (Hurrell, 2005, p. 625). As indicated by his emphasis, these distinctions can be difficult to make in practice because some interventions involve both objective and subjective changes.

We suggest that leadership development is such an intervention – encompassing, as it does, elements of both psychosocial and socio-technical interventions. The available evidence, for example, suggests that transformational leadership affects individual well-being by changing employees’ perceptions of their work (e.g., Arnold et al., 2007; Nielsen et al., 2008), suggesting that enhancing leaders’ transformational leadership behaviours would constitute a psychosocial intervention. At the same time, abusive or destructive leadership can, in itself, be a stressor (Kelloway et al., 2005), and interventions designed to improve leadership would constitute a socio-technical intervention.

The effectiveness of interventions aimed at enhancing leadership

However, one might choose to categorize development of leadership as an occupational health psychology intervention, there is clear and unambiguous evidence that leadership development “works.” That is, the available data support the suggestion that activities designed to enhance leadership in organizations do in fact result in improved perceptions of leadership (see for example, Barling et al., 1996; Kelloway et al., 2000; Mullen & Kelloway, 2009). Such activities have typically involved training in the form of workshops (Dvir, Eden, Avolio, & Shamir, 2002), participation in coaching (Kombarakaran, Young, Baker, & Fernandes, 2008) or combinations of both approaches (e.g., Barling et al., 1996; Kelloway et al., 2000).

In their recent meta-analysis, Avolio, Reichard, Hanna, Walumba, and Chan (2009) provided a comprehensive review of the effectiveness of leadership interventions. Drawing on data from over 200 studies over a period of more than 50 years based on a variety of leadership theories, Avolio et al. (2009) reported evidence that leadership interventions do in fact result in enhanced leadership. In 62 of the studies considered, the intervention in question was the development or training of a leader (as opposed to the assignment of a leader or an actor to portraying a particular leadership style). The data supported a slightly stronger effect for developmental, as opposed to training, activities but overall resulted in the conclusion that leadership development was an effective intervention (corrected effect sizes $d = .41$ to $.48$).

The design of leadership interventions

It is instructive to consider the nature of interventions designed to enhance leadership. For the purposes of discussion, we will focus specifically on the relatively short-term interventions that typically comprise formal training activities with, or without, coaching or feedback. Longer term developmental activities (e.g., the use of developmental assignments, DeRue & Wellman, 2009) are excluded from our discussion because, at present, there is insufficient data linking such activities to outcomes relevant to occupational health psychology.

Barling, Weber, and Kelloway (1996) randomly assigned nine branch managers of a regional bank to the experimental group; and 11 managers to a waiting-list control group. Managers all worked within the same geographic area but each worked in a separate branch of the bank. Managers assigned to the experimental group participated in a one-day workshop on transformational leadership. A day after the training, the leaders met with a coach who provided individual feedback based on employee ratings of the leader's transformational leadership style. During the sessions, the emphasis was placed on the development of specific goals to improve the manager's transformational leadership. Subsequently, the managers met with the coach for three follow-up sessions (one each month for three months) during which goals and progress were reviewed. Managers assigned to the control group received neither the training nor the workshop.

In evaluating the intervention, the authors implemented an assessment based on comparison of pre-test and post-test (i.e., three months following training) measures. Barling et al. (1996) demonstrated that (a) subordinate perceptions of managers' transformational leadership increased in the experimental but not the control group, (b) employee attitudes (i.e., affective commitment to the organization) were enhanced in the experimental group but not the control group and (c) measures of financial performance were enhanced in the experimental but not the control group.

In a subsequent study, Kelloway, Barling, and Helleur (2000) attempted to disentangle the effects of workshop participation and feedback/coaching on the effectiveness of leadership development. Again using a pre-test, post-test design, 40 health care managers were randomly assigned to either a workshop or a training condition in a 2 × 2 factorial design. Results showed that either training or feedback/coaching was an effective means of enhancing subordinate perceptions of transformational leadership but that the interaction of training and feedback did not increase scores above the main effects attributable to the intervention.

In their study of infantry soldiers, Dvir et al. (2002) also focused on the development of transformational leadership. They had seven individuals who were randomly assigned to the transformational leadership condition, which included five days of training, including role playing exercises, simulations, video presentations, and group, peer, and trainer feedback. Participants in the experimental group also participated in a 3-hour booster session after assignment to a leadership position. Comparison with data from a control group suggested that training participants increased both their knowledge of transformational leadership theory constructs and their transformational leadership behaviours as rated by subordinates.

Mullen and Kelloway (2009) further adapted the training program developed by Barling and colleagues (Barling et al., 1996; Kelloway et al., 2000) in their evaluation of a safety-specific management training intervention. They randomly assigned 54

health care managers from 21 organizations to one of three training interventions (general vs. safety-specific) or control group (no training). The general transformational leadership training intervention consisted of a half-day workshop for the managers (Barling, 1996; Kelloway et al., 2000) designed to familiarize managers with the theory of transformational leadership and goal setting. Mullen and Kelloway began by having managers identify the behaviour of the best and worst leaders they encountered. These characteristics were categorized by the training facilitator as being transformational, negative, or passive leadership behaviours. Managers were provided with an overview of transformational leadership and facilitators worked with participants to develop specific behavioural goals (Locke & Latham, 1984) related to transformational leadership.

The safety-specific training followed a similar format but the focus was on safety issues throughout the training program. Both the general and safety-specific transformational leadership training interventions were standardized in format, length, and method of delivery. The only difference between the two types of training was the experimental manipulation (general vs. safety-specific content). The control group was a waiting-list control, the members of which received the safety-specific training at the conclusion of the study.

In that study, Mullen and Kelloway (2009) examined data from both the 54 participant leaders and 115 matched respondents in order to assess the effectiveness of the training. They found that participation in training resulted in improvements in leaders' own safety attitudes, intention to promote safety in the workplace, and safety-related self-efficacy. Data from employees also showed that the employees of leaders in the safety-specific transformational leadership group reported (a) enhanced perceptions of their leaders' safety-specific transformational leadership; (b) enhanced perceptions of safety climate and safety participation and (c) fewer safety-related events and injuries.

Although all of these interventions were effective, consideration of several design elements is instructive for those considering implementing similar designs. We highlight three of these for consideration: the *intensity* of the intervention, the *need to specify intervening variables*, and the *logistical difficulties of evaluation*.

1. *Intensity of the intervention.* With regard to the intensity of intervention, we note that published intervention studies show considerable variation. Whereas Mullen and Kelloway (2009) based their study on a 3-hour (half-day) intervention, Dvir et al's (2002) intervention comprised five days of training. Barling et al. (1996) implemented coaching and feedback sessions along with the training whereas Mullen and Kelloway (2009) focused solely on training based on the observation that both training and feedback were effective means of enhancing leadership behaviours (Kelloway et al., 2000). The available data do not allow a clear determination of the "optimal" length of training or the best configuration of training and feedback. However, it is clear that within the broad spectrum of organizational interventions (e.g., Hurrell, 2005; Parkes & Sparkes, 1998), leadership development is a cost-effective approach resulting in minimal disruption to the workplace.

2. *Need to specify intervening variables.* Second, we note that a characteristic of leadership development initiatives is that they are designed to induce change in organizational leaders in order to change the attitudes, behaviours and experiences of

employees. Nielsen, Taris, and Cox (2010), this issue) define organizational interventions as science-based actions that target relatively large number of individuals. Unlike other interventions (e.g., safety training and stress management) that primarily target participants, the ultimate focus of leadership training is typically on individuals who do not participate in the training (i.e., on employees). By definition, therefore, the effects of leadership training on employee outcomes are indirect, being mediated by a host of potential intervening variables. Avolio (1999) makes the point that if an intervention has a direct effect on task performance it is probably not dealing with leadership – leadership effects manifest themselves through intervening variables such as attitudes and motivations.

In a similar vein, the effects of leadership development on occupational health and safety are by necessity indirect. The direct effect of leadership development is to enhance an individual's leadership behaviours. In the first instance, these changes must be perceived by employees. These perceived changes must then influence employees' attitudes and motivations. In turn these changes would be expected to be manifested in behavioural change and, ultimately, changes in outcome variables. Consideration of the mechanisms through which leadership development might affect occupational health and safety outcomes suggests the advisability of measuring and modelling each of the hypothesized changes in order to allow a specification of *how* leadership development affects occupational health and safety outcomes.

Indirect effects such as those described above also imply a time lag between the time of intervention and the effects of the intervention. Improvements or changes in health and safety resulting from leadership development may not be manifested in the very short term. Indeed it has been common to assess the effects of leadership development only after three months have elapsed post intervention (Barling et al., 1996; Mullen & Kelloway, 2009). Researchers are frequently enjoined to assess variables in a longitudinal design at "appropriate" time lags (Edwards, 2008). Although our experience has been that a three-month time lag allows the detection of significant effects of leadership development interventions, we have no theoretical or empirical means to determine what the appropriate time lag is for leadership intervention research. This is a critical limitation in that missing the appropriate time lag might lead to inappropriate inferences – a real effect may be missed if the post-test assessment is made too soon (i.e., before the effect has had time to manifest itself). Similarly, a real effect may be missed if the assessment is made too late and the effect dissipates prior to assessment. Again, the current data do not allow an assessment of how long any effect of leadership intervention actually lasts.

3. *Logistical difficulties of evaluation.* Finally, the combination of rigorous experimental design and indirect effects results in logistically difficult studies to conduct. To some extent, leadership development shares this characteristic with other forms of intervention in occupational health psychology. Such interventions are notoriously difficult to evaluate (Hurrell, 2005; Kelloway, Day, & Hurrell, 2008) and leadership development is no exception. A consideration of data reported by Mullen and Kelloway (2009, pp. 258–259) clearly illustrates the logistical difficulties involved.

Of the 172 participants [leaders] who received surveys, 84 participants responded (48.8% response rate). Due to listwise deletion of missing data on the pre-test measure, a sample of 60 leaders was obtained . . . Of the 1,822 health care workers [employees] who received

surveys, 494 participants responded... At the post-test, 269 participants completed the survey... due to matching participant responses at both the pre-test and post-test and listwise deletion, 115 responses were retained.

The requirement to match data from pre-test to post-test and from subordinates to leaders coupled with the normal problems of survey response and subject attrition can result in a large amount of data loss and, potentially, an inability to evaluate the intervention. Although these problems are not unique to leadership interventions, they are enhanced by the multiple levels of “matching” required for a rigorous evaluation of effects.

Directions for future research

Despite the problems of conducting rigorous evaluation of leadership development as an occupational health psychology intervention, we have not abandoned hope for potential for future research in this area. Rather, we begin our consideration of future research initiatives with a call for more intervention studies focused on leadership development. We believe that the data supporting a link between organizational leadership and occupational health psychology outcomes are unequivocal. Furthermore, the available data suggest that leadership development provides occupational health psychologists with a pragmatic and effective tool with which to affect these outcomes. All interventions are difficult to evaluate, and the particular problems associated with leadership interventions dictate the use of strong interventions likely to produce the intended effects, careful modelling of anticipated effects, and a rigorous attention to data collection. We strongly suggest that the available data warrant the conducting of more, not fewer, leadership development initiatives in occupational health psychology.

A focus on leadership interventions may mitigate some of the difficulties in implementing organizational-level stress or wellness interventions. Nielsen, Randall, Holten, and Gonzalez (2010), this issue) note that occupational health psychology interventions are seen as something separate from running the daily business and ensuring high performance. They call for more attention to how we might integrate occupational health psychology interventions with the normal functioning of organizations. Leadership development activities provide one such avenue; they are well-accepted in industry as a means of increasing performance and organizational effectiveness (see for example, Barling et al., 1996) and have clear links to individual health and well-being

Second, we have noted throughout this review that leadership development is unique in that the focus is on changing the leaders in order to change employees. However, we also note here the possibility for leadership development to enhance the health and safety of the leaders themselves. Mullen and Kelloway (2009), for example, found that leaders in the safety-specific leadership training condition reported enhanced safety attitudes, self-efficacy, and intent to promote safety. It is conceivable, although the authors did not test the hypothesis, that in enhancing leaders' safety attitudes, Mullen and Kelloway (2009) enhanced leaders' own safety behaviours. Similarly, when leadership development results in leaders having a greater sense of their own self-efficacy (arguably a dimension of mental health, Warr, 1987) this may result in a greater sense of well-being for the leaders themselves. Examining the effects

of leadership development on the health and safety of the leaders themselves is an interesting and potentially fruitful area of future enquiry.

Finally, one interesting question that arises when considering leadership interventions is the organizational level of the intervention. Most of the studies we have reviewed have focused on employee perceptions of the behaviour of their immediate supervisor. However, it is plausible that interventions aimed at senior management might also be effective. Avolio et al. (2009) were able to address this question in their meta-analysis and found stronger effects for leadership interventions at the level of the direct supervisor level (effect size: $d = .69; .71$) than at middle ($ds = .46, .51$) or high ($d = .51$) levels of management. Although these findings suggest the advisability of focusing at the immediate supervisory level, the non-zero effects for higher levels of management also suggest the potential for a more comprehensive intervention that crosses multiple levels of the organization's leadership structure. Flin (2003) has advanced a similar argument with respect to occupational safety. She argues that supervisors, mid-level managers, and senior managers all have a distinct effect on employee safety. Moreover, she recommends the regular assessment of senior managers' commitment to safety.

Conclusion

Our review of the existing literature suggests that sufficient data have now accumulated to allow the unambiguous conclusion that organizational leadership is related to, and predictive of, health and safety-relevant outcomes in employees. Moreover, we believe that a small but growing body of literature supports the effectiveness of leadership development as a means of positively influencing these outcomes. Pursuing this suggestion will, we believe, substantially advance our knowledge of not only leadership development but also other areas of occupational health psychology.

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