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Leadership and Safety

A Self-Regulation and Social Learning Perspective

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Leadership has long been established as a critical element in relation to workplace safety. We will consider the role of leadership in safety, with a focus on recent theoretical and practical developments in the area. Our chapter is organized into three parts that cover: (1) established, existing research on the role of leadership for safety; (2) emerging strands of research that approach safety leadership from a self-regulation and social learning perspective; (3) implications for safety leadership interventions. The chapter reviews established research as well as new thinking about leadership and safety to help drive novel research directions in the area of safety leadership.

Safety Leadership: The Current State of Knowledge

In this initial section, we discuss the current state of knowledge regarding safety leadership, in particular traditional leadership theories, such as Bass's (1985) full-range leadership theory (including transformational and transactional leadership) and the implications for workplace safety. We consider the importance of leadership in relation to the organization's safety culture and as an antecedent to safety climate, before turning our attention to the underlying psychological mechanisms linking leadership to safety outcomes.

Within organizations, leadership at the most senior levels has direct effects on organizational safety: senior management decisions (for example regarding resource allocation, investment in training, maintenance and updating of equipment) will determine how safety risks are managed at an operational level. Such decisions are fundamentally shaped by (and consequently shape) the organization's safety culture. The failure of leaders to adequately factor safety considerations into their business decisions has been repeatedly highlighted by investigations into major disasters, where the adverse effects of poor safety leadership can be measured in terms of their considerable human, societal and environmental costs. Reason (1993, 1997) argued that the majority of

organizational accidents have their origins within the managerial sphere; but the deleterious effects of poor safety leadership permeate throughout the organization, affecting attitudes and behaviours at every level. For example, in 2010 a major accident at BP's Macondo offshore drilling rig in the Gulf of Mexico resulted in the deaths of 11 oil workers, and, subsequently, in an extensive oil spill with devastating and wide-ranging environmental effects. The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (2011) report into the accident concluded that: 'most of the mistakes and oversights at Macondo can be traced back to a single overarching failure – a failure of management. Better management by BP, Halliburton, and Transocean would almost certainly have prevented the blowout by improving the ability of individuals involved to identify the risks they faced, and to properly evaluate, communicate, and address them' (p. 90). This conclusion is not unusual, and highlights the critical role that leaders play in setting the context within which individuals evaluate and manage risks on a day-to-day basis. Similar conclusions have been drawn from the analysis of earlier incidents in the oil and gas industry, such as the Texas City oil refinery explosion in 2005 (Hopkins, 2008), and the Piper Alpha disaster in 1988 (Cullen, 1990), and across various other industrial sectors.

As suggested by the above quote, failures of management affect the cognitions, perceptions and behaviours of individuals working at an operational level. Leaders may directly influence the level of hazards within working environments, but they may also affect risk evaluations and safety attitudes through employees' perceptions of the safety climate (i.e., perceptions of the priority that safety is given in relation to other organizational goals, such as productivity; Zohar, 1980, 2010). Leaders' actions and attitudes towards safety, which reflect the strength of their commitment to safety, are recognized as a key aspect of safety climate (Flin, Mearns, O'Connor & Bryden, 2000). Substantial research has investigated the role of safety climate and established that safety climate acts as an antecedent of a range of safety outcomes (such as injuries and accidents) and safety-related behaviours (such as safety compliance and safety participation). This body of work comprises both meta-analyses (e.g., Beus, Payne, Bergman & Arthur, 2010; Christian, Bradley, Wallace & Burke, 2009; Clarke, 2006, 2010; Nahrgang, Morgeson & Hofmann, 2011) and longitudinal studies (e.g., Johnson, 2007; Neal & Griffin, 2006; Zohar, 2000).

Safety leadership acts as an antecedent of safety climate, which in turn mediates the effects on safety outcomes (Clarke, 2013; Mullen & Kelloway, 2009; Zohar, 2002a), as well as having direct effects on behaviour (Clarke, 2010). Zohar (2002a) argued that the value-based and individualized interactions characteristic of transformational leadership underpin the positive impact of this leadership style on safety outcomes. Indeed, there is a well-established link between leaders who demonstrate genuine care for the well-being and safety of their workforce, and higher levels of workplace safety (Cohen, 1977; Dunbar, 1975; Hofmann, Jacobs & Landy, 1995; Mullen, 2005; Parker, Axtell & Turner, 2001). In a longitudinal study, Parker et al. (2001) demonstrated that having supportive, coaching-oriented supervisors led to safer working over an 18-month period. Furthermore, supportive leadership

had a significant positive association with safety compliance, and also with employee engagement and satisfaction, as shown by the meta-analysis conducted by Nahrgang and colleagues (2011). Such relationships would suggest that supportive leaders encourage employees to follow safety rules and regulations, but also that they create a positive working environment, which enhances work-related attitudes, such as job satisfaction. Supportive leaders are more willing to listen to safety concerns and discuss safety issues with their team (Hofmann & Morgeson, 1999; Mullen, 2005). Such safety interactions not only will encourage further safety participation from employees, but should also raise managerial awareness of safety issues, leading to reduced hazards in the workplace. Evidence gathered from interventions involving enhanced interactions between supervisors and employees around safety supports a positive impact on employees' behaviour and safety outcomes (Kines, Andersen, Spangenberg, Mikkelsen, Dyreborg & Zohar, 2010; Zohar, 2002b; Zohar & Polachek, 2014).

Discussion concerning the most effective leadership style for promoting workplace safety has centred on the positive influence of transformational leadership on employees' safety perceptions, attitudes and behaviour (Barling, Loughlin & Kelloway, 2002; Conchie & Donald, 2009; Inness, Turner, Barling & Stride, 2010; Kelloway, Mullen & Francis, 2006; Zohar & Luria, 2004), and its association with fewer accidents and injuries (Yule, 2002; Zohar, 2002b). One mechanism through which transformational leaders influence their employees is based on the types of relationship that form between leaders and their subordinates over time. Transformational leaders are better able to build with their employees high leader-member exchange (LMX) relationships, which are based on trust, loyalty and integrity (Dulebohn, Bommer, Liden, Brouer & Ferris, 2012). Leader behaviours in these high-quality relationships are reciprocated by employees through safe working and safety citizenship behaviours (Hofmann, Morgeson & Gerrass, 2003; Kath, Marks & Ranney, 2010). Because of the trust-based relationship with supervisors, high LMX has been associated with employees feeling comfortable speaking up and raising safety concerns in the workplace (Kath et al., 2010). However, while Hofmann et al. (2003) showed a strong positive association between high LMX and safety citizenship role definitions, suggesting that employees reciprocated high LMX through performing such behaviours, they also found that this relationship was moderated by safety climate. Thus, this relationship was strong in work groups with a positive safety climate, but much weaker in those exhibiting poorer safety climates. As high LMX relationships only lead to increased engagement in safety citizenship behaviours when safety climate is positive, this would suggest that safety-related behaviour is only viewed as a legitimate means of reciprocating a high LMX relationship with the leader when safety is perceived as having high priority. Similarly, Clark, Zickar and Jex (2014) showed that narrowly defined role definitions (i.e., those characterized by the belief that organizational citizenship behaviours (OCBs) are dependent on the quality of social exchange) moderated the positive relationship between safety climate and nurses' safety citizenship behaviours.

Transformational leaders, through a better understanding of safety issues and improved communications (Conchie, Taylor & Donald, 2012), may directly influence decisions about the management of safety hazards. In addition, there will be indirect influence through their capacity to build consensus amongst employees about the priority given to safety (Luria, 2008; Zohar & Tenne-Gazit, 2008). At a group level, Zohar and Tenne-Gazit (2008) found that transformational leaders encouraged team members to develop shared perceptions of safety through the promotion of shared values, the setting of collective goals, and teamwork. The study, which focused on group interactions within military platoons, using social network analysis, demonstrated that communication density (extent of platoon members' interactions) mediated the effect of transformational platoon leaders on the subsequent development of group safety climate. In contrast, it has been argued that passive leaders, who demonstrate no interest in safety and avoid safety problems, disrupt the formation of shared views regarding the importance of safety (Luria, 2008). Supporting research has shown that passive leadership results in significant negative effects on safety, including increased incidence of occupational injuries and adverse safety events (Kelloway et al., 2006; Mullen, Kelloway & Teed, 2011) and reduced safety-related behaviours, especially safety participation (Jiang & Probst, 2016; Smith, Eldridge & DeJoy, 2016). Furthermore, even transformational leaders who sometimes engage in passive safety leader behaviours risk damaging workplace safety: this inconsistent leadership style has been associated with negative safety outcomes. Mullen et al. (2011) found that, for those leaders who demonstrated both transformational and passive styles, the use of passive behaviours (e.g., avoiding safety issues) attenuated the positive effects of transformational behaviours (e.g., motivating employees to act safely). The importance of transformational leadership for activating those employees who are motivated to actively participate in safety was emphasized by Jiang and Probst (2016). They found that the relationship between safety motivation and safety participation was moderated by transformational leadership, so that the relationship only existed under high transformational conditions. The authors also found that passive leadership had a significant negative effect on safety participation: employees with passive leaders were less likely to actively engage in safety activities.

Although passive leadership has negative effects on workplace safety, active forms of transactional leadership (which involve proactive monitoring of employees' behaviour, taking corrective actions and anticipating problems) facilitate the development of a work environment in which opportunities for error recovery are increased and learning from mistakes is encouraged. This type of active leadership style enables leaders to learn how to anticipate potential adverse events, better preparing them to intervene and prevent safety incidents (Griffin & Hu, 2013; Rodriguez & Griffin, 2009). In addition to improving leaders' own capabilities, the proactive monitoring associated with active transactional leadership has been associated with employee safety behaviour, especially safety compliance (Clarke, 2013; Griffin & Hu, 2013). Thus, the emphasis on monitoring and correcting employees' behaviour increases awareness of the importance of safety regulations, and encourages rule-following. Research has shown that there are differential effects of leader behaviours in relation to employee safety behaviours.

For example, Griffin and Hu (2013) found that safety-inspiring leader behaviours were significantly associated with safety participation: motivating behaviour encouraged active involvement in safety activities, safety citizenship behaviours and speaking up about safety. On the other hand, safety-monitoring leader behaviours were aligned with safety compliance: close supervision encouraged adherence to safety rules and regulations. Similarly, Clarke (2013) supported a model of safety leadership in which transformational leadership was directly related to safety participation, and active transactional leadership was directly related to safety compliance. Such studies suggest that safety leaders might use a combination of transformational and active transactional behaviours to influence workplace safety effectively. Indeed, Clarke and Ward (2006) found that influence tactics associated with both leadership styles were effective in promoting employee safety participation.

Theoretical Perspectives Linking Leadership to Safety Performance

As highlighted in the previous section, a sizeable body of research demonstrates the link between leadership and various aspects of safety performance. While establishing this link is important, it is imperative to elucidate the underlying processes that explain how leaders, and different leadership styles, influence followers' safety performance. The theoretical frameworks described below demonstrate the reasons why certain leadership styles predict safety performance and can help establish the boundary conditions that may accentuate or attenuate such effects. Specifically, this section will review emerging approaches to studying leadership and safety. To provide a theoretical framework, we will integrate these emerging approaches within the wider conceptual perspectives of social learning, social exchange and self-regulation. Such theoretical perspectives have been prominent in recent research investigating the leadership–safety link.

Safety Leadership from a Social Learning and Social Exchange Perspective

The impact of leaders on employee safety attitudes and behaviour has been explained through the principles of social exchange and social learning. Social exchange theory posits that if a party acts favourably towards another party, this gives rise to a sense of obligation to reciprocate the beneficial behaviour (Blau, 1964). In an early study, Hofmann and Morgeson (1999) referred to social exchange theory as a theoretical foundation for a better understanding of the effect of leaders on workplace safety. If a leader provides resources for safety and invests in safety training for employees, this will create a sense of obligation amongst followers to reciprocate through engagement in positive safety behaviour (Hofmann & Morgeson, 1999; Hofmann et al., 2003). Social learning theory has been utilized as a second conceptual foundation for investigating the role of leaders in employee safety behaviour. Social learning theory proposes that learning occurs in a social context through the observation of and interactions with others (Bandura, 1977). Applying a social learning perspective to safety

leadership, it is suggested that as leaders interact with their employees, they transmit messages about what is expected with regard to safety (Dragoni, 2005; Zohar & Tenne-Gazit, 2008). Consistent with a social learning perspective, numerous studies have shown that leaders influence their followers' safety behaviours through safety climate, as discussed previously. For example, meta-analytic evidence shows that safety climate mediates the relationship between transformational-transactional leadership styles and individuals' safety behaviour (Clarke, 2013). Thus, employees learn the value of safety, as well as what behaviours are accepted and rewarded, through observing and interacting with their leader. The following section will use the principles of social exchange and social learning to review research on the effects of different leadership approaches on employee safety behaviour and attitudes.

As discussed in the first section of this chapter, support for a positive relationship between transformational leadership and employee safety behaviours has been reported by several studies (e.g., Barling et al., 2002; Conchie & Donald, 2009; Inness et al., 2010; Kelloway et al., 2006; Zohar & Luria, 2004). Within transformational leadership, the dimension of idealized influence directly recognizes the importance of role modelling as part of effective leadership (Bass, 1985). Idealized influence is the extent to which a leader displays exemplary conduct and is regarded by their followers as a role model. Within the dimension, a behavioural and an attributional component can be distinguished (Bass & Riggio, 2006). The behavioural element is the extent to which the leader exhibits behaviours that result in their being viewed as a role model, and the attributional element is the extent to which followers attribute 'idealized' characteristics to the leader (e.g., being worthy of trust and respect). Barling et al. (2002) conceptualize that safety leaders who are high in idealized influence impart safety as a core value through their personal commitment and behaviour. Hoffmeister, Gibbons, Johnson, Cigularov, Chen and Rosecrance (2014) tested the relationship of individual facets of transformational leadership with each of safety climate, safety compliance and safety participation in a sample of construction workers. Using relative weights analysis, the authors revealed a pattern whereby idealized influence (attributes) and idealized influence (behaviours) explained greater amounts of variance in the safety outcomes than the other dimensions of transformational leadership. More precisely, idealized influence (attributes) was the most important predictor of safety climate and idealized influence (behaviours) was the most important predictor of safety participation. The finding suggests that transformational leaders predominately influence employees' attitudes towards safety and safety performance through a role-modelling process, while other leader actions associated with transformational leadership might carry less weight in the effect on safety outcomes. Hoffmeister et al. (2014) discuss the possibility that idealized influence is a prerequisite for other leadership tactics to be effective. For example, challenging existing assumptions about safety (Intellectual Stimulation) or getting employees to buy into a vision (Inspirational Motivation) is difficult to accomplish unless the leader is viewed as a role model. Consequently, a primary focus for safety leaders should be on establishing themselves as a role figure that employees endeavour to emulate. An important part of being considered as a role model involves building trusting and authentic relations with

followers. Authentic leaders foster a social identification process through awareness of their own strength and limitations, acting in ways that are consistent with their own true self and placing moral conduct at the core of their actions (Eid, Mearns, Larsson, Laberg & Johnsen, 2012; Gardner, Avolio, Luthans, May & Walumbwa, 2005). Thus, it can be expected that, for effective role modelling, leaders need to deploy transformational practices as part of authentic relations where concern for well-being and safety are inherent to leader–follower exchanges. Within the wider leadership literature, it has been recognized that leaders can engage in pseudo-transformational leadership, where transformational behaviour is decoupled from ethical principles and aimed at maximizing self-interest (Bass & Steidlmeier, 1999; Christie, Barling & Turner, 2011). In the safety leadership literature, studies so far have demonstrated a positive association between authentic leadership and safety climate (Borgersen, Hystad, Larsson & Eid, 2014; Nielsen, Eid, Mearns & Larsson, 2013), but more research is needed on how transformational leadership style and authentic leadership interact with each other in their influence on safety outcomes.

The importance of role modelling for good safety leaders can be related to the concept of behavioural integrity. Zohar (2003, 2010) shows that the extent to which safety values are *espoused* is not necessarily aligned with the extent to which safety values are *enacted* during work operations. Safety can be proclaimed as a high priority through organizational policies, but in the face of budget or production pressures safety procedures might be compromised. The true priority of safety emanates from the degree of congruence between the espoused and enacted values of safety (Zohar, 2010). Behavioural integrity is the (mis)alignment between leaders' words and deeds, or the extent to which leaders 'walk the talk' (Simons, 2002, 2008). Research has demonstrated the importance of leader behavioural integrity in establishing and reinforcing the value of safety (Halbesleben, Leroy, Dierynck et al., 2013; Leroy, Dierynck, Anseel et al., 2012). The findings from these studies suggest that behavioural integrity influences employees' safety behaviour through two mechanisms. By putting words into practice, leaders clearly signal that adherence to safety protocols is desirable and constitutes behaviour that will be rewarded (this constitutes a social learning mechanism). In a second, complementary mechanism, behavioural integrity creates a predictable environment through consistent prioritization of safety, which consequently lets followers feel safe to speak up about safety concerns and report errors. This dual mechanism is important, as achieving excellent levels of safety performance involves following safety procedures to prevent errors as well as learning from failure through investigation of errors (Rodriguez & Griffin, 2009; Weick & Sutcliffe, 2007). Leroy et al. (2012) studied leader behavioural integrity as a predictor of reported treatment errors in a sample of hospital nurses. If head nurses displayed high levels of behavioural integrity with regard to safety issues, their teams rated the priority of safety as higher, which in turn was associated with fewer treatment errors. At the same time, head nurses' behavioural integrity was linked to higher psychological safety within the team, which in turn was related to more reporting of treatment errors. Thus, if leaders' actions live up to their words, they influence follower safety behaviour through role modelling, and the consistency in their support for safety delineates safety as a genuine

concern, with the result that followers feel confident to report errors or breaches of safety protocol (Halbesleben et al., 2013; Leroy et al., 2012). Other studies (Blumer, 1969; Weick, 1995) have highlighted the relevance of social sensemaking in high-risk environments, where employees are typically confronted with multiple demands, such as ensuring safety while keeping a project on schedule and reducing cost (Zohar, 2010). Therefore, the priority of safety is not absolute, but relative to other demands and targets (Shannon & Norman, 2009; Zohar, 2008, 2010; Zohar & Tenne-Gazit, 2008). Moreover, dangerous work contexts or crisis situations might place increased cognitive demands on the individuals who operate within them (Dóci & Hofmans, 2015). Hence, it can be argued that a core function of safety leadership is to aid employees to make sense of the complexity and ambiguity that characterize their work environment (Baran & Scott, 2010; Mumford, Friedrich, Caughron & Byrne, 2007). Dahl and Olsen (2013) showed in a sample of offshore petroleum workers that if leaders were involved in daily work operations employees had greater levels of role clarity, which in turn improved safety compliance. The relevance of sensemaking for effective safety leadership is that good safety leaders need to engage in practices that can reduce ambiguity and demarcate accepted and expected behaviours from those that are not. This sensemaking approach would suggest that transactional leadership practices, which create structure and clarity, will be of importance to safety leadership (despite the focus of extant research on transformational leadership). As noted earlier, transformational leadership behaviours predict safety participation, while transactional leadership behaviours are associated with safety compliance (Clarke, 2013; Griffin & Hu, 2013). Probst (2015) found that supervisors' encouragement of safe working practices (e.g., through reward and praise) was related to a reduction in underreporting of accidents, and that this relationship was moderated by the organizational-level safety climate. If the organization's safety climate does not provide a clear frame of reference for safe working (because of a lack of systematic safety procedures and policies, for example), followers are dependent on the guidance of their leader through strict enforcement of safe working behaviours. This is in line with earlier research that has identified safety climate as a moderator of the leadership–safety outcome relationship (Hofmann et al., 2003).

Social exchange theory has also been drawn upon to explain the role of trust in safety leadership. Research evidence from several studies lends support to the idea that followers' trust in their leader assists that leader to exert influence on employee safety behaviour (Conchie, 2013; Conchie & Donald, 2009; Conchie, Taylor & Donald, 2012). In contrast to economic exchanges, where stakes can be clearly offset against each other, the equivalence of contributions in social interactions cannot be managed to the same level of precision (Blau, 1964). Therefore, if followers are to respond to their leaders' actions, they need to hold a certain level of trust that their behaviour will be valued and rewarded in some form (Conchie, Woodcock & Taylor, 2015). With regard to the effect of leadership on safety outcomes, empirical support exists for trust as mediator (e.g., Conchie et al., 2012) as well as moderator (e.g., Conchie, 2013; Conchie & Donald, 2009). As a moderator, trust in one's leader can be viewed as a factor that reinforces followers' willingness to look to their leader

as a role figure. Because of the very nature of a leadership position – its associated status and visibility within a team or organization – employees might be likely to model their own behaviour on that of their leader. Yet, certain factors such as trust are likely to enhance this role model position. Honesty, and to a lesser extent competence and benevolence, have been identified as important qualities that help safety leaders to promote trust and avoid issues of distrust (Conchie, Taylor & Charlton, 2011). Moreover, ethical leadership has also been noted as a predictor of subordinates' trust in their supervisor (Chughtai, Byrne & Flood, 2015).

While empirical research has provided evidence on the importance of followers' trust in their leader for workplace safety, it can be argued that followers' feeling of being trusted by their management is also of relevance (Conchie et al., 2015). If employees perceive that their managers and the wider organization hold trust in them, they are likely to have a greater sense of obligation to reciprocate this trust (Conchie et al., 2015). Employees who feel that their manager trusts them with regard to safety matters will feel greater levels of responsibility for safety and reciprocate with higher levels of safety performance (Törner, 2011). This line of argument can be related to research on empowering leadership, which is aimed at enhancing follower autonomy and a team's potential for self-management (Arnold, Arad, Rhoades & Drasgow, 2000). In a series of studies in nuclear power plants, Martinez and colleagues demonstrated that empowering leadership has a positive impact on safety climate (Martínez-Corcóles, Gracia, Tomás & Peiró, 2011), safety compliance (Martínez-Corcóles, Gracia, Tomás & Peiró, 2014) and safety participation (Martínez-Corcóles, Schnöbel, Gracia, Tomás & Peiró, 2012), and is linked to a reduction in risk-taking behaviour (Martínez-Corcóles, Gracia, Tomás, Peiró & Schöbel, 2013). More specifically, collaborative learning and enhanced role clarity have been identified as the mechanisms through which empowering leaders positively influence followers' safety behaviour (Martínez-Corcóles et al., 2012; Martínez-Corcóles et al., 2014). Thus, through practices such as participative decision-making, the creation of opportunities for independent problem solving, and the facilitation of the dissemination of information, leaders can provide employees with more meaning in their job roles and work environment, which enhances followers' impetus to deploy safety protocols and enables them to become more engaged in safety matters. While there is conceptual overlap across transformational, authentic and empowering leadership approaches, they complement each other in the practical information they provide for safety leaders. Transformational leadership and authentic leadership emphasize the importance of role-modelling processes and communicating genuine concern; empowering leadership supplements this guidance for safety leaders by highlighting the power of delegation practices and participative decision-making to enhance employee safety performance.

While social learning theory has been used to explain the positive effects of constructive leadership styles on followers' safety behaviour, the same processes can be drawn upon to explain how non-leadership and destructive leadership negatively influence employee safety. As outlined earlier, there is empirical evidence that passive forms of leadership, as well as inconsistent leadership, which is characterized by active and passive leadership, have detrimental effects on

safety (Kelloway et al., 2006; Mullen et al., 2011). Through an absence of attention to safety matters in leader–follower exchanges, leaders not only pass by the opportunity to reward positive safety behaviours or share safety knowledge, but convey the message that safety is a less important objective (Kelloway et al., 2006). Thus, safety leaders must recognize that social learning processes still take place when they take a passive stance towards safety, and that this passivity reinforces safety as something of lesser concern. Within the leadership literature, it is noted that destructive leadership can take a passive or an active form (Aasland, Skogstad, Notelaers, Nielsen & Einarsen, 2010; Einarsen, Aasland & Skogstad, 2007), and some argue further that passive, non-leadership should be considered separately from the concept of destructive leadership (Schyns & Schilling, 2013). Abusive supervision and tyrannical leadership, where a leader abuses their formal power and engages in behaviour that is targeted at influencing followers in a hindering or harmful way, are examples of active destructive leadership (Einarsen et al., 2007; Schyns & Schilling, 2013). There is robust evidence that active destructive leadership behaviour has negative effects on an employee's well-being, stress and performance (Krasikova, Green & LeBreton, 2013; Schyns & Schilling, 2013; Tepper, 2000). The effects of active destructive leadership forms on safety performance and perceptions of safety have been studied less (Kelloway & Barling, 2010), but Nielsen, Skogstad, Matthiesen, and Einarsen (2016) explain that, as the harmful effects on employee well-being have been established, similar effects can be expected for workplace safety. In a time-lagged study over six months, Nielsen et al. (2016) found a negative relationship between tyrannical leadership and subsequent safety climate, although tyrannical leadership was less strongly associated with safety climate than constructive leadership. Schyns and Schilling (2013) suggest that the effects of destructive leadership can work through the same social learning mechanisms as those of constructive leadership. By repeatedly engaging in negative behaviours, leaders role-model these as appropriate, and contribute towards a climate where destructive behaviour is tolerated. Thus, from observations of their leaders' tyrannical behaviour, followers learn that neglect of the welfare of others, including disregard of their physical safety, is acceptable. From a social exchange perspective, it can be argued that leaders' destructive behaviour is repaid by employees trying to 'restore justice' through equally negative behaviours (Schyns & Schilling, 2013). With regard to safety, such attempts to get even could involve disregard of formal policies, including safety regulations, or withdrawal of voluntary efforts for enhancing safety at work. Destructive leadership is also likely to prevent an atmosphere where followers feel safe to speak up about safety issues and might therefore suppress the sharing of safety knowledge and prevent safety learning. However, empirical research on these effects is still needed. Interestingly, Nielsen et al.'s (2016) results also indicated a reciprocal relationship between safety climate and tyrannical leadership. Thus, social interaction processes between leaders, followers and the wider work environment are not one-directional, but are likely to occur in a more dynamic form. The authors discuss how, under poor safety climate conditions, leaders might resort to becoming more authoritarian and even tyrannical in an attempt to assert safety practices. This could potentially lead to a downwards spiral, where such misguided efforts of destructive leadership

produce the opposite effect, and instead of enforcing safety lead to the further deterioration of safety climate.

So far the focus of safety leadership research has largely been on understanding how individual, single leaders influence safety outcomes. Yet social learning and social exchange processes are not restricted to leader–follower exchanges, but can also occur in interactions with peers. Positive, high-quality relationships between co-workers are likely to facilitate similar role-modelling and behavioural imitation processes as occur within leader–follower interactions. Moreover, from a social exchange perspective, it can be argued that if a co-worker displays favourable behaviour towards a colleague (e.g., looking out for their safety during a job), this will create a sense of obligation in that colleague to reciprocate through similar concern for their peers' safety, and consequently create a work climate where colleagues expect positive safety behaviour from each other. For example, Zohar and Tenne-Gazit (2008) reported that friendship ties between co-workers are linked to a more positive safety climate. Nahrgang et al. (2011) provided meta-analytic evidence that a high level of social support amongst co-workers is related to reduced accident and injury rates. Turner, Chmiel, Hershcovis and Walls (2010) tested the role of co-worker social support in a sample of rail trackside workers. Their findings show that under demanding job conditions where employees experience high levels of role overload, co-worker social support for safety was related to reduced frequency of hazardous work events. Drawing on social information-processing theory (Salancik & Pfeffer, 1978), Turner et al. (2010) explain that employees rely on their co-workers' behaviour as social cues to understand what is expected under certain circumstances, such as safety-critical situations. Moreover, results from Turner et al. (2010) showed that perceptions about co-worker social support were more prominent in reducing hazardous work events than perceptions of supervisor and managerial social support. The authors base this finding on social impact theory (Latané, 1981), which proposes that the significance of sources for support will be larger for sources that exist in closer proximity and greater numbers. Within the wider organizational literature, a growing body of literature is devoted to understanding the effects of shared leadership for team effectiveness (e.g., Carson, Tesluk & Marrone, 2007; Nicolaides, LaPort, Chen et al., 2014; Pearce & Sims, 2002; Wang, Waldman & Zhang, 2014). The concept of shared leadership extends beyond social interactions between colleagues and suggests that co-workers can informally adopt leadership responsibilities to provide direction and influence (Carson et al., 2007). Several studies have demonstrated that shared leadership is more strongly linked to team effectiveness than formal, vertical leadership is (Carson et al., 2007; Ensley, Hmielski & Pearce, 2006; Nicolaides et al., 2014; Wang et al., 2014). Within the safety literature these potential benefits of shared leadership have been less explored. Evidence from Guediri and Fruhen (2015) indicates that shared leadership is positively related to safety performance if formal leaders have a low tendency to be concerned about safety. Given the growing evidence for positive effects of shared leadership with regard to non-safety outcomes, this presents a promising research stream for occupational safety research to explore how shared leadership can be utilized to further improve workplace safety.

Safety Leadership and Self-Regulation Theory

Like social learning theory, Self-Regulation Theory (SRT) is a stalwart of social psychology. In general, SRT is concerned with the conscious process of managing one's cognitions, behaviours and feelings to achieve a goal (e.g., Lord, Diefendorff, Schmidt & Hall, 2010). The theory emphasizes that individuals guide their own goal-directed activities and performance by setting their own standards and monitoring their progress towards these standards (e.g., Carver & Scheier, 1981). SRT has been posited as a mechanism that can explain safety leadership in two ways.

First, scholars have argued that SRT can be used as a framework to better understand the processes through which leaders avoid major errors or manage everyday safety requirements (e.g., Rodriguez & Griffin, 2009). Although transformational leadership specifies that managing activities, such as detection of errors, is a vital part of transformational change (Bass & Avolio, 1993), the theory largely fails to specify how this process actually occurs in leaders. To rectify this limitation researchers have proposed an integration between transformational-transactional leadership and situational regulatory focus theory. Higgins's (1997, 1998) Regulatory Focus Theory describes promotion focus and prevention focus as two distinct self-regulatory mindsets. Promotion focus is a mindset that stresses an individual's need for growth, attention to gains, and the attainment of aspirational goals. Prevention focus, on the other hand, is a mindset emphasizing the need for security, attention to losses, and the completion of obligations (Higgins, 1998). According to Rodriguez and Griffin (2009) regulatory focus can be used to explain why, in certain circumstances, monitoring subordinates and providing contingent feedback (i.e., Management by Exception) might be the most effective safety leadership style. Specifically, the authors suggest that when the goals of the leader, such as ensuring reliability or improving safety records, relate to safety, the leader will be prompted to assess the context as one of avoiding failure, thus exhibiting a prevention-focused mindset. Conversely, when the leader assesses the situation as one of approaching success (e.g., achieving a bonus), a promotion-focused mindset is likely to be prompted. In fact, a number of researchers have linked transformational and transactional leadership styles to promotion and prevention focus (e.g., Brockner & Higgins, 2001; Kark & van Dijk, 2007). Such arguments are predicated on the notion that transformational leadership style is motivated by a promotion focus, while transactional leadership is motivated by prevention focus because of the concern with deviations, safety and security. Further attesting to the importance of SRT to an understanding of safety leadership is the fact that authentic leadership theory suggests that both greater self-awareness and self-regulated positive behaviours on the part of leaders foster positive self-development (Luthans & Avolio, 2003). Indeed several distinguishing features associated with authentic self-regulation processes have been identified, including internalized regulation, balanced processing of information, relational transparency, and authentic behaviour (Gardner et al., 2005). As mentioned in the previous section authentic leadership has been linked to safety perceptions (Borgersen et al., 2014; Nielsen et al., 2013).

Second, despite the fact that SRT is conceived in terms of within-person processes, research has demonstrated that leaders can influence this process in their followers through providing impetus for the pursuit of certain goals. Again using Higgins's (1997, 1998) delineation of promotion focus and prevention focus as two distinct self-regulatory mindsets, researchers have attempted to better understand how leadership relates to safety performance. Although an individual may have a disposition towards a particular regulatory focus, situational triggers can elicit either a prevention or a promotion focus. For instance, Brockner and Higgins (2001) suggested that leaders influence followers' regulatory focus through the use of language and symbols. Accordingly, the more leaders employ rhetoric that focuses on ideals, the more chance they will have to evoke in followers a mindset that is promotion-focused. Indeed, research supports the claim that leaders can evoke different self-regulatory mindsets in their followers, leading to differential effects on outcomes such as performance, deviant behaviour and creativity (e.g., Neubert, Kacmar, Carlson, Chonko & Roberts, 2008). Applying this logic to the context of safety performance, scholars have argued that leaders can influence followers' self-regulation in a way that can explain effects on safety-related outcomes. In this context, employees are theorized to engage in safety performance as motivated by their safety goals. Accordingly, safety leadership can be understood as a leadership style that provokes followers to focus on, and achieve, their safety goals.

Using this framework, Griffin and Hu (2013) investigated how specific leader behaviours predicted two distinct employee safety behaviours: safety participation and safety compliance. The authors proposed that different leader behaviours, related to safety inspiration and safety monitoring, would differentially evoke safety-related goals, in accordance with SRT. Safety-inspiring leader behaviour involved the presentation of a positive vision of safety, deemed to be appealing and inspiring to the followers, whereas safety-monitoring leader behaviour involved the observation of whether employees are working safely. It was hypothesized that safety-inspiring leader behaviour would promote safety participation, as it would enable followers to see the meaning and value of safety activities, thus motivating the investment of time and effort to engage in safety activities in order to realize that vision (Griffin & Hu, 2013). Furthermore, the authors argued that the leader's engagement in safety-monitoring behaviour would motivate employee safety compliance. Specifically, in line with SRT, it was suggested that safety monitoring, a concept similar to the management-by-exception element of transactional leadership (Bass, 1985), would increase followers' awareness of the discrepancy between their current state and their desired state. In fact, within SRT, monitoring is considered as a crucial mechanism to motivate individuals to allocate resources towards a desired state. Thus, leader safety monitoring was hypothesized to evoke followers' awareness of unsafe actions or behaviours that did not comply with the current safety procedures. Consequently it was argued that followers would know where they need to focus and improve, thereby increasing their safety compliance behaviours. The empirical results of Griffin and Hu (2013), in accordance with the aforementioned rationale, demonstrated that while safety-inspiring leader behaviour was positively related to safety participation, safety monitoring was positively related to safety compliance.

Building on this research, a study by Kark, Katz-Navon and Delegach (2015) provided a more explicit test of the tenets of SRT in relation to safety leadership. While Griffin and Hu (2013) provided a theoretical link between leadership behaviour and follower safety performance, Kark et al. (2015) examined the mediators of the relationship. The authors examined the role of promotion and prevention self-regulations in explaining the dual effects of leadership on safety-initiative and safety-compliance behaviours. Predicating their claims on SRT, the authors argued that transactional and transformational leadership would differentially affect followers' safety-initiative and safety-compliance behaviours. More specifically, it was argued that a transactional style, whereby leaders closely monitor followers' behaviour and highlight their obligations and responsibilities, would evoke a prevention focus among followers. Self-regulation via a prevention focus involves paying attention to security needs and the fulfilment of duties and obligations (e.g., Lanaj, Chang & Johnson, 2012), and was therefore predicted to yield higher safety compliance in followers (Kark et al., 2015). On the other hand, the authors predicted that a transformational style, whereby leaders focus on followers' growth and development and encourage followers to examine problems from a new perspective (Bass, 1999), would elicit a promotion focus among followers. As a promotion focus facilitates motivation towards ideals through advancement and accomplishment, it should create a mindset that allows followers to think about safety in new and innovative ways rather than simply adhering to the set regulations. Thus, promotion focus was predicted to be positively related to safety initiative. The results of this study confirmed that followers' situational promotion focus mediated the positive relationship between transformational leadership and safety-initiative behaviours. The authors also showed, across three studies, that transactional leadership was positively associated with followers' situational prevention focus. However, mixed support was found for the link between prevention focus and safety-compliance behaviours, with expected mediation relationships shown in an experimental setting, but not in the field studies.

Recently, the concept of self-regulation has been studied in relation to safety performance within a mindfulness framework. Originally espoused within Buddhist traditions, mindfulness is a concept that can be defined as a mental state with the characteristics of present-focused awareness and attention (e.g., Brown, Ryan & Creswell, 2007). Interest in the topic has recently extended to the organization context, as witnessed by a proliferation of recent studies investigating the effects of mindfulness on various outcomes, such as employee performance and well-being (e.g., Dane & Brummel, 2014; Hülsheger, Alberts, Feinholdt & Lang, 2013). Furthermore, a number of studies have investigated the role of dispositional levels of mindfulness on various aspects of safety performance. For instance, higher levels of mindfulness in a sample of nuclear power plant control room operators were positively associated with both safety-compliance and safety-participation behaviours (Zhang & Wu, 2014). Using a similar sample, Zhang, Ding, Li and Wu (2013) showed that for highly complex tasks present-focused awareness and attention (facets of mindfulness) were positively related to safety performance. To understand the aforementioned effects of mindfulness, scholars draw

on self-regulation theory to outline how this trait explains various outcomes. Put simply, it is suggested that mindfulness leads to better regulation of thoughts, emotions and behaviours. Brown and Ryan (2003), for instance, posit that mindfulness may increase self-endorsed behavioural regulation as individuals disengage from automatic thoughts, habits, and unhealthy behaviour patterns. For instance, in relation to safety performance, it is suggested that more mindful individuals are better equipped to avoid cognitive failures, involuntary lapses or errors because they are more aware of the external environment and internal processes (Herndon, 2008; Reason, Manstead, Stradling, Baxter & Campbell, 1990). Although research, to date, has not focused on leader mindfulness in relation to safety leadership, we suggest that this is a topic that holds great potential to explicate both leader and follower safety performance. Specifically, there are at least two ways in which mindfulness is relevant for safety leadership.

Firstly, as described above, leaders' self-regulation can be an extremely useful framework for explaining how safety goals are pursued (e.g., Rodriguez & Griffin, 2009). Reb, Narayanan and Chaturvedi (2014) found that leaders' trait mindfulness had a number of positive associations, for example with follower performance. The authors suggested that through increased emotional regulation, mindful leaders are able to develop better-quality relationships with followers, which in turn lead to increased performance and well-being. Mindfulness research draws on different self-regulatory mechanisms to explain the relationship between mindfulness and outcomes (e.g., Brown & Ryan, 2003). Leaders higher in trait mindfulness are thus predicted to be better at cognitive, behavioural and emotional regulation. Such self-regulatory process, as described earlier, should be positively related to the achievement of safety-related goals. Secondly, recent research has suggested that followers' level of trait mindfulness can influence their response to certain types of leadership. Specifically, Eisenbeiss and van Knippenberg (2015) found individuals high in mindfulness responded more positively to ethical leadership through the exhibition of discretionary work behaviour than those low in mindfulness. The authors posited that mindfulness can alter the way in which followers perceive and process the information conveyed by leaders. The awareness associated with being mindful should, theoretically, make followers especially aware of, and receptive to, information in the environment, conveyed by leaders, and this awareness should trigger the conscious processing of such information. The findings of Eisenbeiss and van Knippenberg (2015) may be applicable to safety leadership as they suggest that mindful followers will be more receptive to their leader's safety messages and as a result exhibit greater levels of safety performance. Overall, we believe mindfulness is a concept that holds great potential for our understanding of safety leadership and safety performance more generally.

Practical Implications for Safety Interventions

In this final section we consider the implications of safety leadership research for organizations, in particular regarding the design and implementation of safety interventions. Existing work suggests that leadership interventions are generally

successful in changing leader behaviours (Avolio, Reichard, Hannah, Walumbwa & Chan, 2009) and that, while safety interventions targeted at leadership behaviour are used relatively infrequently, they are effective in improving workplace safety (Kelloway & Barling, 2010). Evaluation studies, which report longitudinal data, have provided evidence that leaders can be trained to use leadership behaviours that subsequently lead to safer performance among employees; leadership interventions have tended to focus on either training managers to use transformational leader behaviours (e.g., Mullen & Kelloway, 2009) or enhancing supervisory communications with employees around safety issues (e.g., Kines et al., 2010; Zohar & Polachek, 2014). For example, Zohar and Polachek (2014) implemented an intervention to increase daily safety exchanges between supervisors and employees; they found that in the experimental group there were significant positive changes in safety climate, safety behaviour, subjective workload and measures of teamwork, as well as improved safety audit data. In contrast, the control group demonstrated no significant changes. In such interventions the key changes relate to improved safety communications, in which supervisors demonstrate the importance of safety as a priority and two-way communications are enhanced, so that there is greater opportunity to exchange information about safety issues.

Interventions which include a broader range of leader behaviours, including both transformational and transactional behaviours, have been reported (e.g., Clarke & Taylor, 2015). The development of transformational leader behaviours plays an important role in influencing perceptions of safety climate and also in improving safety behaviours, especially participation, by inspiring and motivating employees (Mullen & Kelloway, 2009). Transactional leader behaviours have been more strongly linked to enforcing safety compliance than to promoting safety participation in employees (Clarke, 2013), but may also be important from the perspective of the individual leader. Transactional leader behaviours are likely to help leaders improve their ability to understand safety issues, anticipate problems and prevent safety incidents. For example, von Thiele Schwarz, Hasson and Tafvelin (2016) found that leaders' safety self-efficacy improved following leadership training, where safety self-efficacy reflects taking active control (such as the level of confidence in giving safety-related feedback and in preventing individuals from doing something risky). Training leaders in mindfulness has had limited use for safety interventions but has potential to improve safety-related behaviours, for both leaders and employees. For example, mindfulness training has been used to reduce safety workarounds performed by medical staff in health care settings (Dierynck et al., in press) and may be helpful in improving the 'flexible thinking' required by senior leaders to manage high-risk situations (Fruhen & Flin, 2016).

Conclusions

Research on safety leadership has highlighted the positive influence of constructive styles, such as transformational and authentic leadership, and also the negative effects of destructive styles, such as passive leadership. Models of safety

leadership have further suggested that a combination of transformational and transactional leader behaviours may be particularly effective in promoting safety performance. We have provided a theoretical frame to integrate emerging approaches to safety leadership within the wider conceptual perspectives of self-regulation and social learning. Existing research on leadership interventions has shown that leadership training can be effective in the improvement of workplace safety. In our discussion, we identify the potential of mindfulness training for safety leaders as a means of enhancing safety-related behaviours in both leaders and employees. We have addressed new concepts that have relevance for safety leadership, but have not yet received much empirical investigation, opening up further avenues of investigation for safety researchers and practitioners.

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