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Conceptual difficulties and open concerns in leadership, psychological capital, and safety studies

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Abstract

In this theory-driven literature review, we consider how recent findings from the field of positive organizational behavior (POB) and the study of effective leadership might shed light on the underlying human dynamics that determine the final results of safety initiatives. Self-awareness and self-regulation are important factors in the leader-follower interchange, according to the genuine leadership paradigm. We claim that the production management's beliefs, attitudes, and behavior in safety critical organizations (SCOs) are connected to safety climate and safety results based on the expanding literature on genuine leadership. New insights into management theory identify four components of "psychological capital" that contribute to successful businesses and steady, high-quality performance in employees. We extrapolate a study model and five research hypotheses from this, alluding to the fact that genuine leadership has a direct impact on safety outcomes by fostering an optimistic view of the workplace's general safety environment. Furthermore, we offer an alternative route in which the link between genuine leadership, SCO safety atmosphere, and safety results is mediated by psychological capital.

Keywords: Safety climate Safety critical organizations Authentic leadership Psychological capital

1. Introduction

This research study is theory-driven and explores the potential impact of leadership and good organizational behavior on safety outcomes in safety-critical organizations (SCOs) including the emergency services, the oil and gas industry, and other high-risk sectors. We build on previous reviews of safety climate research (e.g., Glendon et al., 2006; Zohar, 2010) by focusing on how recent developments in leadership theory, specifically the concept of Psychological Capital (PsyCap), can inform our knowledge of the mechanisms at play in the realm of safety outcomes.Leadership behavior is a significant aspect intimately connected to the safety atmosphere in organizations, according to a number of studies. For instance, Hofmann and Morgeson (1999) discovered that accidents were mediated by both self-reported safety communication and supervisor perceptions of safety commitment, as well as exchanges between leaders and members of the organization. Their findings imply that employees are more dedicated to safety and more willing to communicate openly about it when they see their 4. organization as supportive and have strong relationships with their superiors.This has prompted an interest in learning more about the processes at play in SCOs' leadership and administration that contribute to a culture of safety. Safety atmosphere has been shown to have a mediating role between transformative leadership behaviors and safety results (see, for example, the work of Barling et al. Similarly, Zacharatos et al. (2005) discovered that the association between a high performance work system and safety performance (as evaluated by personal-safety orientation) was mediated by confidence in management and perceived safety environment. Research in a variety of situations (Zohar, 2002; Zohar and Luria, 2004; 2005) confirms the significance of leadership style in establishing favorable work climates and fruitful safety results. Mearns and Yule (2008) reviewed international research on workplace safety, and their findings suggested that factors closer to the workplace, such as management's apparent dedication to safety and the effectiveness of safety measures, have a greater effect on employee actions and, in turn, accident rates than do cultural norms.To further our theoretical understanding of the antecedents, mediators, and moderators of the relationship between safety climate and safety outcomes, Zohar (2010) recently reviewed three decades of research on safety climate and came to the conclusion that the relationship between safety climate and safety outcomes is well established in the literature. There is still a need for study into two important questions: how do managers demonstrate their dedication to safety, and what kind of motivational state do they instill in their subordinates? To that end, this research seeks to catalogue the possible processes by which leadership influences safety results. Our starting point is the idea that good organizational behavior, namely genuine leadership and psychological capital (PsyCap), might shed light on safety science. In particular, we argue that these constructs may indicate underlying processes of how certain styles of

leadership might increase employee buy-in to safety-related behaviors, promote a healthy safety culture, and lessen the occurrence of accidents and injuries in SCOs.

This paper is based on existing research. We have chosen to use the offshore, oil and gas industry as our primary example of a safety critical organization which offers an abundance of techno- logical, environmental, and human challenges and opportunities (Crichton, 2005; O'Dea and Flin, 2001). Although the offshore industry has enforced rigorous procedures and standards to ensure safe operations, the BP/Gulf of Mexico disaster in 2010 is a grim re-minder of the risks and adverse outcomes of major disasters in this industry. Fig. 1 illustrates the main selected theoretical concepts which we suggest have the potential of explaining ''the how'' be- tween leadership and safety outcomes. The arguments and associ- ated hypotheses will be presented in the following sections in a concept-by-concept manner. Two of the causal relationships sug- gested in Fig. 1 will be less extensively covered: authentic leader-ship–psychological capital (H2) and safety climate–safety outcomes (H4 and H5) since these relationships have been con- vincingly demonstrated in previous research. This means that we will focus our arguments on how the authentic leadership–psycho-logical capital relationship on one hand and the safety climate– safety outcome relationship on the other hand could be linked and subsequently examined in future research.

2. Leadership

Several academic disciplines take an interest in leadership. The present study will be restricted to models which could mainly be classified as social psychological or organizational psychological. A search of the leadership literature in the ''ISI Web of Knowledge'' database from 2000 to 2010 revealed that the transformational leadership model (e.g. Bass, 1998) and the authentic leadership model (e.g. Gardner et al., 2005), were among the most frequently cited models in more than 900 publications. Although the transfor-mational and authentic leadership models show a high degree of overlap, the authentic leadership model was chosen as our point of departure, due to its explicit emphasis on the personal and social identification processes, role modelling, and value based leader- ship (Avolio and Gardner, 2005). Thus, in relation to the question of how managers show their commitment to safety and how they affect the motivation of their followers, we regard the authentic leadership model as a more fruitful avenue to pursue. With regard to safety issues it is particularly noteworthy that authentic leaders are seen to enhance the engagement, motivation, commitment, and involvement required from followers to constantly improve their work and performance outcomes through processes of per- sonal and social identification (Avolio et al., 2004), resulting in im- proved job satisfaction and performance in followers (Avolio and Luthans, 2006; Avolio and Walumbwa, 2006; Gardner et al., 2005; Luthans and Avolio, 2003).Posited outcomes of authentic leader–follower relationships include heightened lev- els of follower trust in the leader, engagement, workplace well- being, and veritable sustainable performance (Gardner et al., 2005). From this perspective we specifically propose authentic leader- ship as a pattern of leader behaviour that draws upon and pro- motes both positive psychological capacities and a positive ethical climate. Authentic leaders will tend to foster greater self- awareness, relational transparency, an internalized moral perspec-tive, and balanced processing in the sense of comprehensive infor-mation search and processing, resulting in positive self-

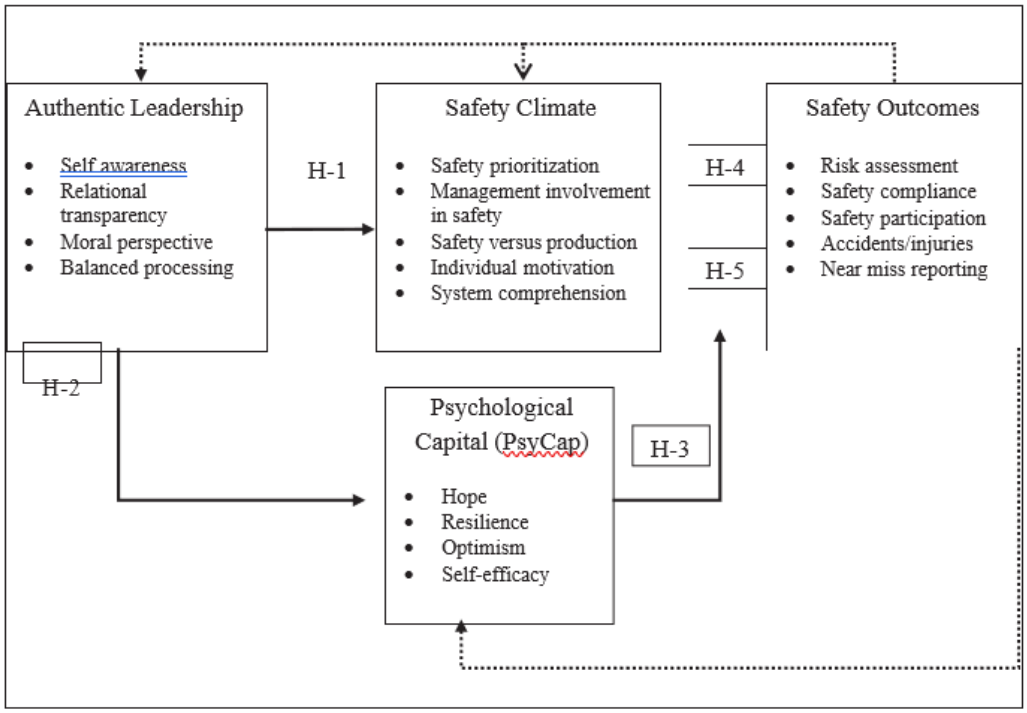

Fig. 1. Proposed model linking authentic leadership and psychological capital to safety climate and safety outcomes.

development in followers (Walumbwa et al., 2008). The authentic leadership factor labelled ''leader self-awareness'' occurs when individuals are cognizant of their own existence, and what consti- tutes their personal strengths and limitations within the organiza- tional context (Silvia and Duval, 2001). In SCOs like the offshore, oiland gas industry offshore leaders at every level are confronted witha very explicit focus on internal safety procedures, mandatory exercises and training requirements, as well as an explicit focus on costs and production, environmental compliance, etc. This safety focused organizational context will be part of worker's self awareness in SCOs.

Secondly, ''relational transparency'' refers to presenting one's authentic self (as opposed to a fake or distorted self) to others. Leaders in SCOs, such as offshore installations, must be prepared to work in confined and often isolated work environments in con- tinuous shift cycles 24 h a day over several weeks with little or no opportunity for privacy. In such work environments leaders are very visible and subordinates have multiple and frequent opportu-nities to evaluate if leaders ''walk their talk'' in keeping their prom-ises and living up to their own standards.

The third factor labelled ''internalized moral perspective'' im-plies that authentic leaders develop and draw upon reserves ofmoral capacity, efficacy, courage, and resiliency to address ethicalissues and achieve moral actions. Leaders in SCOs may be con-fronted with significant moral dilemmas and possible adverse out-comes for fellow workers and third parties. One major dilemmafacing offshore managers is the expectation to meet productiongoals and secure economic gains versus concerns for safety(Mearns et al., 2003). If the leaders are seen to be guided by inher-ent moral perspectives and values and not subject to external pres-sure or seen as responsible for immoral acts, they will more likelyset a moral standard that exerts a positive influence on co-workers.Finally, ''balanced processing'' refers to leaders who show thatthey systematically analyze all relevant data before reaching adecision. This may be particularly important in SCOs where muchmay be at stake, e.g. the BP Deepwater Horizon and Macondo welldisaster. In practice this implies that leaders will vigorously re-quest additional information, explore alternate solutions, and ifnecessary also challenge prevailing views of the situation. Balancedprocessing also implies that contrasting and critical information iswelcomed and alternative solutions from fellow workers areappreciated and will be taken into consideration by the leader. Fol-lowing from this brief overview we believe that these four pro-cesses of authentic leadership could encourage more productiveleader–follower exchanges and empower followers to make a dif-ference and act according to moral and professional (includingsafety) obligations rather than self-interest. Emerging empirical re-search suggests that authentic leaders instill desired motivationalstates in followers such as organizational citizenship behaviourand work engagement (Walumbwa et al., 2010a,b). This leads to our first research hypothesis (see Fig. 1):

H1. If leaders have a strong safety focus, then authentic leadership will be positively related to follower perceptions of higher levels ofsafety climate in SCOs.

In summary, safety-focused authentic leaders will develop safety-focused followers through role modelling and social identi-fication processes (Gardner et al., 2005). Thus, authentic leaders will instill powerful social processes that may influence individual priorities, embed moral perspectives, and stimulate processes of positive organizational behaviour. Following from the model inFig. 1, authentic leadership processes will have an impact on the human resources of the organizations as exemplified by psycholog-ical capital (PsyCap).

3. Psychological capital (a form of positive organizationalbehaviour)

The term positive organizational behaviour denotes an emerging focus on a positive approach to developing and managing human resources in contemporary workplaces (Luthans et al., 2007a). We believe the developmental characteristic of positive psychological resource capacities is particularly relevant to SCOs which fre- quently must adapt to a fast-paced, unpredictable, and often hostileenvironment in order to function safely and effectively.

Positive organizational behaviour has been defined as ''the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement'' (Luthans, 2002, p. 59). From this definition, the psychological constructs thathave fulfilled scientific inclusion criteria thus far are *self-efficacy*, *optimism*, *hope*, and *resilience* (Luthans et al., 2007b). When com- bined they represent what has been termed psychological capital or PsyCap, defined as an individual's positive psychological state of development (Luthans et al., 2007b). In our view PsyCap is rele- vant to employees in SCOs because it may facilitate safety focused behaviour. Following from Luthans et al. (2007b) we will elaborateon how the four characteristics of PsyCap can promote greater safety awareness and instil safety focused behaviour.

Firstly, the concept of *self-efficacy* implies that employees have confidence to take on and put in the necessary effort to succeed whenconfronting challenging tasks. In SCOs such as the offshore oil and gas industry, workers must feel confident that they have the neces-sary skills and technical knowledge required to understand risks and dangers involved in work operations, and the necessary profession-alism and self confidence to report potential hazards. Thus, self-effi-cacy can be regarded as fundamental to safety focused behaviour.

Secondly, the concept of *optimism* refers to the workers' prefer-ences and tendencies to make positive and realistic attributions about succeeding now and in the future. This tendency to see the possibility to change the situation is also important in acting in accordance with safety rules and regulations, to take action and avoid determinism and fatalism in dealing with work related issues that may have safety implications, be they technical or human.

Thirdly, the concept of *hope* denotes an individual's preference to persevere toward goals and, when necessary, redirect paths to goals in order to succeed. This tendency to seek out new opportu- nities and implement new equipment, procedures or knowledge tostay focused on safety focused behaviour and loss prevention, is important to avoid slipping into an overconfident and complacent attitude to safety issues.

Finally, the concept of *resilience* refers to the individual tendencyto sustain and bounce back and even beyond when beset by prob- lems and adversity. This tendency to never give in and always seekto overcome problems and obstacles represents a valued asset in achieving desired outcomes as opposed to giving up or falling backwhen confronting difficult issues. In addition it is also worth acknowledging the perspective of ''engineering resilience'' which could be applied to the organizational level to assess the influencesbetween individual and organizational resilience (Hollnagel et al., 2006, 2008; Nemeth et al., 2009).

From this brief overview of the elements of PsyCap, it is worth noting that factors of PsyCap are independent factors in their own right, but that they may interact and pull in the same direction (e.g.hope/optimism and hope/resilience). According to Luthans et al. (2007a) the elements of PsyCap will work adaptively together and influence human functioning through control and coordinationof different attention and memory functions into higher order cog- nitive functions. We propose that authentic leadership behaviour will contribute to this positive mind set in followers, influence their decision-making and ultimately safety

behaviour, given the appropriate environmental conditions including leadership sup-port for the expression of that behaviour. From emerging research on positive organizational behaviour (Walumbwa et al., 2011), we expect authentic leaders to facilitate positive developmental statesin followers as indicated by the construct of psychological capital (PsyCap). In the following we will examine if positive behavioural states of employees may represent a second avenue for leadership influence on follower's safety outcomes.

Previous research has indicated that leadership effects on safetyclimate are mediated by group-level characteristics (Zohar and Tenne-Gazit, 2008), but to our knowledge no empirical studieshave examined if positive individual states like PsyCap will aug-ment safety behaviour in SCOs with high safety climate. Given that the social context of organizations is largely a creation of the indi- viduals who make up that context and their interactions positive worker motivation in the form of PsyCap may represent a signifi- cant resource in promoting safety outcomes in SCOs. Research indicates that the overall core construct of PsyCap better relatesto the outcomes of employee performance, job satisfaction, and absenteeism than do the individual constructs that make up Psy- Cap (Luthans et al., 2005, 2007a). To our knowledge, the relation- ship between PsyCap and safety outcomes in SCOs is not clear. According to Luthans et al. (2006) PsyCap is open to development, and may be subject to change following brief structured interven- tions. The PsyCap factors of hope, optimism, resilience, and self- efficacy may therefore represent potential pathways of leader influence on follower's safety behaviour in SCOs.

From this we propose that authentic leaders who serve as role models and instill shared beliefs, common goals and positive indi- vidual states (e.g. self-efficacy, hope, optimism, and resiliency), willinfluence follower's safety climate and facilitate safety focused behaviour. The factors of authentic leadership and PsyCap may therefore combine to increase followers' motivation to engage in safety focused behaviour and actions to prevent loss and adverse events.

This potential role of PsyCap on the organizational climate–work outcome relationship was further examined by Luthans et al. (2008) utilizing three diverse work life samples. The results showed that employees' psychological capital was positively re- lated to their performance, satisfaction, and commitment and thata supportive climate also was related to employees' satisfaction and commitment. In following up on these results Avey et al. (2008) found that employees' psychological capital mediated the relationship between organizational climate and performance indicators. Furthermore, psychological capital emerged as a strongpredictor of work attitudes and behaviours (Avey et al., 2010).

Empirical research testing possible mediating processes be- tween authentic leadership and psychological capital and the im- pact at the group-level has so far revealed that collective psychological capital may play an important role in the relation- ship between authentic leadership and work groups' desired out- comes (Walumbwa et al., 2010a). Here it is worth noting Barling and Frone's (2004) distinction between *compliance* (e.g. obeying safety regulations, following the correct procedures, and using appropriate equipment) and *participation* behaviour that does not directly contribute to an individual's personal safety but supports safety in the wider organizational context. In line with our previ- ous reasoning, we propose that the PsyCap factors of *self-efficacy*, *hope*, *optimism*, and *resiliency* might serve as potential mediating mechanisms in the authentic leadership/safety outcome relation- ship by fostering positive emotional states that will facilitate both compliance and participation behaviour in support of safety out-comes (Gardner et al., 2005). From this we suggest that there mightbe a second path from leadership to safety outcomes, in that Psy- Cap could serve a mediating role on safety outcomes (e.g. safetyfocused behaviour and loss prevention) of the relationship pro- posed in H1. From this follow two new hypotheses (see Fig. 1):

H2. Authentic leadership will be positively related to psycholog- ical capital in that followers who see their leaders as more authentic, will also experience emotional and motivational states corresponding to the psychological capital factors of self-efficacy, optimism, hope and resilience.

H3. Psychological capital variables will mediate the relationship between safety climate and safety outcomes.

4. Safety climate

The concept of safety climate has been much emphasised in re- search and innovation in safety science (Wiegmann et al., 2001; Zo-har, 2010). As shown in Fig. 1, we have focused on the concept of safety climate in our model. However, many researchers and practi-tioners continue to refer to safety culture when considering the many factors that have the potential to influence safety perfor- mance. Guldenmund (2000) suggests that safety culture primarily seems to denote an overall evaluation of management, rather than to reveal basic cultural assumptions. Hence it could be argued that these so-called safety culture measures are actually measures of safety climate. Although the distinctions between safety climate and safety culture are debated, the concept of climate is frequently applied in survey research since it is better defined and measured in the literature (Cox and Flin, 1998). Climate is often referred to asan empirically measurable component of culture and has been shown to have relationships with organizational outcomes but is conceptually distinct from them (Neal et al., 2000; Zohar, 1980, 2002). In our theoretical model we have therefore chosen to empha- size safety climate (see Tharaldsen et al., 2008). In the following sec- tion we will briefly elaborate on how authentic leadership andpsychological capital variables may map onto safety climate (see Fig. 1).

Following from our discussion of authentic leadership it is rea-sonable to believe that safety climate will be heavily influenced by the way in which employees perceive management (as well asfirst-line supervisor) priorities for safety as compared to competingmanagement priorities. These priorities are most often seen to re- flect the true values of management and set the standards of what is expected within the organization and what activities are recog- nized and rewarded. We expect safety-focused authentic leadersto be intrinsically motivated and to be well aware of the boundariesand opportunities for safety management and safety prioritization in the organization. When confronted with conflicting choices be- tween production and safety they will encourage active involvementand feedback from subordinates and emphasize an internalized moral perspective in their decision process. In cases where the leader has limited system comprehension, knowledge, and skills the authentic leader will actively seek relational transparency and encourage balanced processing of safety relevant information and alternative actions. Taken together, the strong interpersonal and communicative skills of the authentic leader will facilitate role mod-elling and affect safety outcomes via promoting positive safety cli- mate perceptions in followers.

In Fig. 1 we propose that the influence and role modelling effect of authentic leaders will influence safety climate both directly and indirectly through developmental characteristics of followers. More precisely, we propose that PsyCap may have a mediating roleon the outcomes of safety climate. Following from three decades ofresearch, literature reviews and meta-analyses suggest that safety climate offers a robust prediction of objective and subjective safety criteria across industries and countries (Christian et al., 2009; Zo- har, 2010). According to Neal and Griffin (2004), safety climate could be seen to reflect a distinct and measurable psychological environment that provides a motivational

antecedent for key dimensions of safe behaviour: (a) determinants of safe perfor- mance (e.g. safety knowledge and safety motivation); (b) safe per- formance (e.g. following safety protocols); and (c) safe outcomes (e.g. occurrence or non-occurrence of injuries). However, safe per- formance is not the same thing as following safety protocols and it is not self-evident that a better safety climate will improve safety indicators in the short run. One example of this is the paradoxical effect that an improved safety climate may well also lead to better incident reporting and hence an apparent worsening of safety per- formance. Furthermore measures are imperfect and are often lag- ging indicators, and some measures of safety are measuring the wrong things (like reporting rate rather than incident rate).

It is possible that specific incidents and near misses will influence

worker perceptions of safety climate, as indicated in Fig. 1. This reci- procal relationship between safety climate and safety outcomes makes it difficult to determine causal relationships. Still, the rela- tionships between safety climate and safety indicators in that direc-tion are important to keep in mind, since an accumulating body of research has found that worker perceptions of a strong safety cli- mate are related to lower risk perception and safer workplace perfor- mance, less injuries, and most notably fewer reports of rule violations (Mearns et al., 1998, 2001a,b; Neal et al., 2000; Rundmo,1992a,b, 1996, 2000; Zohar and Luria, 2004).

Conclusion

Taken together, the academic research and progress in develop-

ing and validating metrics and measurements aimed at measuring core constructs such as authentic leadership and PsyCap has devel-oped rapidly in recent years. Although more research is still neededon these constructs, we believe that both authentic leadership and PsyCap are well grounded in positive organizational psychology and sufficiently well operationalized to be implemented in safety research. From this review, we believe that it would represent an innovative and potentially important advancement in safety sci- ence to assess the impact of authentic leadership and PsyCap on safety climate and safety outcomes in SCOs.

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