

Charismatic and corrective leadership dimensions as antecedents of employee safety behaviours

A structural model

Kwasi Dartey-Baah and Seth Ayisi Addo
University of Ghana Business School, Accra, Ghana

Abstract

Purpose – The purpose of this paper is to investigate idealised influence under transformational leadership and active management-by-exception (MBE-A) under transactional leadership as the predictors of employee safety behaviours among engineers and technicians in the Ghanaian power transmission subsector.

Design/methodology/approach – The study employed a cross-sectional survey design and a quantitative approach to gather data from 278 respondents through the use of a structured questionnaire. Covariance-based structural equation modelling was used to analyse the data and test the hypotheses with 264 usable responses.

Findings – The analysis revealed that idealised influence had positive significant effects on both safety compliance and safety participation of employees. Surprisingly, MBE-A had a positive influence on safety participation but not on safety compliance.

Practical implications – The findings of this study present useful practical implications for leaders and policy makers in organisations in engendering good safety behaviours of employees and improving overall organisational safety performance.

Originality/value – The variables used in the study together with the study's Ghanaian bureaucratic context present interesting and fresh insights into the interplay between leadership and employee safety, thereby contributing to the discourse on the safety leadership construct.

Keywords Ghana, Active management-by-exception, Idealised influence, Safety behaviours, Structural equation modelling

Paper type Research paper

Introduction

The survival and success of every organisation hinges strongly on the workforce of an organisation; and by extension, the health and safety of that workforce. In the USA, work-related injuries cost organisations about 170 billion US dollars yearly in losses (Towers Watson, 2010), while the National Safety Council similarly reported in their statistics in 2010 that annual losses can be as high as 183 billion US dollars. The National Safety Council (2010) statistics further showed that, for each employee that gets injured, every other employee makes up for it up to about 1,250 US dollars yearly, on average (as cited in Frazier *et al.*, 2013). The International Labour Organisation (2013) reported that due to inadequate health and safety policies and practices at work, about 6,300 workers die daily, while over 2.3 million die annually, with about 317 million workplace accidents occurring annually. In Ghana, Annan (2010) asserted that at least 7 per cent of the country's gross domestic product goes into tackling issues arising out of poor occupational health and safety management. The recorded cases of fatal injuries due to poor health and safety practices were 9,661 in Ghana in 2005 (Piavi *et al.*, 2009). The rate of fatal injuries in the country also rose from 20.6 per every 100,000 workers in 1998 to 23.6 per every 100,000 workers in 2003, resulting in Ghana's position in 2003 as the country with the fourth highest rate of absenteeism in Africa (Piavi *et al.*, 2009).

Throughout the literature on employee safety at work, leadership styles are seen to have profound influences on the safety behaviours of employees, and by extension, organisations'



safety performance. More importantly, leadership has been found in several studies to have the strongest influence (Martínez-Córcoles *et al.*, 2013) on safety at work. Consequently, the importance of leadership to employee safety has manifested through the development of the safety leadership construct over the years, seen as a component of organisational leadership (Pater, 2001) and defined by Wu *et al.* (2007) as a process where leaders and followers interact and through which leaders influence followers in pursuit of organisational safety goals (as cited in Lu and Yang, 2010, p. 124). Furthermore, the literature on safety leadership (Fernández-Muñiz *et al.*, 2014; Griffin and Hu, 2013; Hoffmeister *et al.*, 2014) also reveals a great deal of attention being given to transformational and transactional leadership styles. Wu *et al.* (2015) asserted that the full range leadership model (Bass and Avolio, 1997), which comprises these two leadership styles, can be regarded as the bedrock of the safety leadership construct.

Despite the ascertained influence of leadership styles, mainly transformational and transactional, on the safety behaviours of employees (Christian *et al.*, 2009; Clarke, 2013; Clarke and Ward, 2006; Fernández-Muñiz *et al.*, 2014; Hoffmeister *et al.*, 2014; Hofmann *et al.*, 2003; Inness *et al.*, 2010; Jiang and Probst, 2016; Kelloway *et al.*, 2006; Smith *et al.*, 2016; Wu *et al.*, 2016; Yang *et al.*, 2009; Zohar, 2002), research on the extent to which safety leadership influences safety behaviours is still considered to be at the budding stage (Donovan *et al.*, 2016). Notably, throughout the aforementioned studies, the influences of the dimensions under both leadership styles on safety behaviours were scantily investigated. Hoffmeister *et al.* (2014) iterated that transformational leadership, due to its particular dimensions of idealised influence, inspirational motivation, intellectual stimulation and individualised consideration, relates better to safety participation than safety compliance, because it inspires and motivates subordinates to go beyond task requirements and exhibits citizenship behaviours such as safety participation. They were, however, quick to add that idealised influence gives meaning to the other three dimensions and thus, the other dimensions may not be effective if idealised influence is absent, lending credence to the indispensability of this dimension.

Furthermore, Hoffmeister *et al.* (2014) argued that transactional leadership, with regard to its particular dimensions of contingent reward and active management-by-exception (MBE-A), has more potential in influencing safety compliance than safety participation, because of its corrective nature through rewards and punishment that ensures strict compliance behaviours. Therefore, there is the need for more conclusive studies on the predictive ability of these dimensions (idealised influence, contingent reward, and MBE-A) on safety behaviours of employees. It is worth noting, however, that this study was carried out in a highly bureaucratic and structured context where leaders are not empowered enough to specify rewards in exchange for performance from their employees; thus, the dimension of contingent reward would be less applicable. As such, the focus of this study was on idealised influence (charismatic and exemplary leadership behaviours) and MBE-A (monitoring and corrective leadership behaviours) as the predictors of employee safety behaviours in the Ghanaian power transmission subsector.

Research questions

The study sought to answer the following questions:

- (1) Will the charismatic and exemplary form of leadership predict safety behaviours in the Ghanaian context?
- (2) Does the active monitoring and corrective form of leadership have any influence on employee safety behaviours in the Ghanaian context?

Literature review

Overview of leadership

Researchers agree that the concept of leadership in social sciences is one of the most highly contested areas (Avolio *et al.*, 2003; Bass, 1990). Owing to the dynamic nature of the concept

(Dartey-Baah, 2015), several definitions and theories have been developed throughout the literature. Nonetheless, a review of most of the definitions (Burns, 1978; Griffin, 1999; Hersey and Blanchard, 1979; Northouse, 2004; Winston and Patterson, 2006; Yukl, 2006) indicates that leadership largely is a social process of influence and interaction between one party (leader) and another (followers) that is geared towards the attainment of shared goals and objectives. Similarly, a number of theories have been propounded in an attempt to explain the concept of leadership. Earlier theories captured the concept as a one-directional influence of the leader on the followers (e.g. Great Man, Trait), while recent ones, such as the theory of transformational and transactional leadership styles (Burns, 1978; Bass, 1985), considered the concept as a form of interaction and the important role of followers in the leadership process.

Transformational leadership style

Transformational leadership style, according to Burns (1978, p. 20), involves a process where “leaders and followers raise one another to higher levels of morality and motivation” (p. 20). This leadership style is seen as highly motivational, where the leader interacts with followers on the leader’s values and convictions (Bass, 1985), and also seen to propel followers to higher levels of self-dependence and better task attainment with little supervision (Dartey-Baah *et al.*, 2011). Transformational leaders provide followers with a purpose that goes beyond short-term interests, stressing intrinsic needs that are of higher value (Judge and Piccolo, 2004), thus transforming the interests of the follower from egoistic interest to the common interest (Northouse, 2004). This leadership style has been developed over time and comprises four dimensions (Bass, 1985; Bass *et al.*, 2003; Judge and Piccolo, 2004), namely, idealised influence, inspirational motivation, intellectual stimulation and individualised consideration.

Idealised influence

Judge and Piccolo (2004) explained that idealised influence, also known as charisma, refers to the extent to which the leader exhibits admirable behaviours that is exemplary to followers. In other words, this deals with the extent to which leaders are trusted, respected and identified with by the followers (Prasad and Junni, 2016), thus transformational leaders exhibit strong convictions while appealing to subordinates on an emotional level and by values that they spell out clearly (Warrilow, 2012).

Transactional leadership style

The term transaction indicates an exchange between parties (Dartey-Baah and Ampofo, 2016). Thus, the transactional leadership style, according to Burns (1978), appeals to followers’ parochial interests. This leadership style relies on “exchanges” between a leader and subordinates, where the leader specifies and provides rewards in exchange for subordinates’ performance (Bass *et al.*, 2003; Trottier *et al.*, 2008). Similarly, Kellerman (1984) maintained that in transactional leadership, there is mutual dependence that results in mutual rewards. This leadership style comprises three dimensions, namely, contingent reward, active management-by-exception (MBE-A) and passive management-by-exception (MBE-P) (Bass, 1985).

Active Management-By-Exception (MBE-A)

MBE-A generally focuses on maintaining established routines and procedures, and existing beliefs and traditions (Odumeru and Ifeanyi, 2013). This dimension of transactional leadership implies monitoring employees closely so as to check for deviations and errors in order to correct them quickly before they lead to greater difficulties (Judge and Piccolo, 2004; Obiwuru *et al.*, 2011; Prasad and Junni, 2016).

The main difference, according to Judge and Piccolo (2004), between MBE-A and passive management-by-exception is that the former involves monitoring employees closely so as to check for deviations and errors in order to correct them quickly before they lead to greater problems but passive leaders wait until problems arise before addressing them.

Safety behaviours

Employee safety behaviour is seen as a measure of an organisation's safety performance, and it is viewed as all actions and conducts that promote the practices of safety (Mahmood *et al.*, 2010). Griffin and Neal (2000) classified safety behaviours into safety compliance and safety participation. Safety compliance refers to the "following of safety policies and procedures and engaging in required safety behaviours" (Hoffmeister *et al.*, 2014, p. 69). Inness *et al.* (2010) also refers to safety compliance as behaviours geared towards meeting minimum work safety standards. These activities include appropriate use of personal protective equipment, carrying out tasks in a safe manner, obeying safety regulations and using correct procedures (Griffin and Neal, 2000).

Safety participation, on the other hand, refers to "behaviours that do not directly increase workplace safety, but that help create an atmosphere supportive of safety" (Brondino *et al.*, 2012, p. 1849). Neal *et al.* (2000) explained safety participation as moving beyond procedures to assist colleagues, engaging in voluntary safety activities, promoting safety and its principles, taking safety initiatives, and making efforts to improve work safety. Vinodkumar and Bhasi (2010) also iterated that safety participation involves behaviours that facilitate organisational goals and objectives on safety procedures and safe work environment. Clarke (2006) noted that safety participation is largely voluntary in nature and involves behaviours that move beyond workers' formal roles. Safety participation is also viewed to be mainly associated with organisational citizenship behaviour or considered extra-role behaviours (Jiang and Probst, 2016), due to its voluntary nature. Fernández-Muñiz *et al.* (2014) in their study found that workers' active participation in improving health and safety at work has a positive effect on compliance with safety standards and procedures. In other words, safety participation was found as a source of motivation to workers to enable them comply with safety standards. Additionally, research (Christian *et al.*, 2009; Clarke, 2006) has shown that safety participation has a greater effect in reducing work-related injuries and accidents in organisations.

Leadership styles and safety behaviours

Although a considerable dearth exists in the literature with regard to the influence of the dimensions under transformational and transactional leadership styles on the safety behaviours of employees, inference can be drawn from the extant literature on their collective effects as either transformational or transactional on safety. Clarke (2013) argued that safety leadership can be effective if it comprises aspects of both transformational and active transactional leadership. Most of the literature indicate a positive influence of transformational leadership on safety behaviours. Research (Fernández-Muñiz *et al.*, 2014; Kapp, 2012; Lu and Yang, 2010; Mullen *et al.*, 2016; Smith *et al.*, 2016) shows that transformational leadership style predicts safety behaviours positively. Hoffmeister *et al.* (2014) examined the individual effects of the dimensions under transformational and transactional leadership on safety compliance, safety participation and safety climate using apprentices and journeymen in the USA. They found that idealised attributes and behaviours, intellectual stimulation, inspirational motivation and contingent reward predicted safety compliance and safety participation significantly. Their study, however, laid emphasis on idealised behaviours as the most important predictor of safety participation. Surprisingly, idealised influence was also found to be the most important

predictor of safety compliance. Hoffmeister *et al.* (2014) posited that the other dimensions of transformational leadership may not be effective if idealised influence is separated.

Based on this, the study hypothesised that:

H1a. Idealised influence will predict safety compliance positively.

H1b. Idealised influence will predict safety participation positively.

In the studies of Clarke (2013) and Martínez-Córcoles and Stephanou (2017), it was found that active transactional leadership directly influences safety compliance and indirectly influences safety participation through safety climate. Similarly, Hoffmeister *et al.* (2014) argued that transactional leadership, with regard to its particular dimensions of contingent reward and MBE-A, also influences safety behaviours, particularly safety compliance, because of its corrective nature through rewards and punishment that ensures strict compliance behaviours. Contrarily, other studies (Fernández-Muñiz *et al.*, 2014; Smith *et al.*, 2016) revealed that overall transactional leadership had no significant relationship with the two safety behaviours.

Despite the above inconclusive findings, the study hypothesised that:

H2a. MBE-A will positively influence safety compliance.

H2b. MBE-A will positively influence safety participation.

Method

Approach and procedure

The study employed the cross-sectional survey design and the quantitative approach to gather and analyse data. The population of this study comprised engineers and technicians working in organisations in Ghana's power transmission subsector. This population of engineers was chosen because of the nature of tasks they undertake as they are exposed and prone to health and safety hazards as a result of the unpredictable and seemingly precarious conditions under which most of them work. Data were thus obtained from 278 respondents through a survey and the use of questionnaires, out of a total of 300 questionnaires that were sent out, yielding a response rate of 92.7 per cent. These respondents were conveniently sampled as a result of their busy schedule. The questionnaires were administered and retrieved by the researchers taking all research ethics into due consideration.

Measures

A structured questionnaire was used in collecting data and it consisted of four sections measuring the demographic details, idealised influence, MBE-A and the two safety behaviours. Idealised influence was measured with seven items under the 19-item transformational leadership subscale ($\alpha = 0.92$). MBE-A was measured with four items under the 12-item transactional leadership subscale ($\alpha = 0.70$). These subscales make up the Multifactor Leadership Questionnaire Short Form-5X developed by Avolio *et al.* (1999) based on the original scale by Bass and Avolio (1990). Items were rated on a five-point scale ranging from "Not at all" (1) to "Frequently, if not always" (5). A sample of the items for idealised influence is: "[My supervisor] goes beyond self-interest for the good of the group" and for MBE-A is "[My supervisor] focuses attention on irregularities, mistakes, exceptions and deviations from standards".

Safety behaviours were measured using the eight-item safety behaviour scale by Neal *et al.* (2000) that measured the extent to which respondents engaged in various safety-related practices. The scale consists of two subscales: safety compliance, four items (0.94) and safety participation, four items (0.89). The items on both subscales were rated on a four-point Likert scale ranging from Never (1) to Very Often (4). An example of items on the scale is: "I attend safety meetings and briefings".

Analysis

Data obtained from the questionnaires were coded and analysed with the aid of the Statistical Package for Social Sciences (SPSS) version 20 and AMOS version 22.0. Covariance-based structural equation modelling (SEM) was employed in examining the relationships between the variables and testing of the hypotheses. Babin *et al.* (2008) indicated that SEM has become popular as a result of its ability to measure latent variables and test the relationships between several latent variables simultaneously. As a second generational statistical tool, SEM deals with two main models: first, the structural model which entails the proposed relationships between the independent (exogenous) and the dependent (endogenous) latent variables also known as constructs; and second, the measurement model which comprises the loadings of the items on their respective constructs (Gefen *et al.*, 2000). Thus, combining these two models allows errors of the observed variables as well as factor analysis to be included simultaneously in testing the entire model for proposed hypothesised relationships between constructs (Gefen *et al.*, 2000).

Preliminary analysis

Prior to the SEM analysis, preliminary data analysis was performed by way of checking and dealing with missing values and outliers. Little's MCAR test was done in SPSS and the result was insignificant for each latent construct indicating that the missing values were missing not at random (MNAR) (Little and Rubin, 1987), hence, needed to be dealt with (Hair *et al.*, 2006). The Expectation Maximisation method was thus employed in replacing the missing values, due to its advantage of adequately estimating missing values even in a non-normal data distribution (Gold and Bentler, 2000). Outliers were checked using histograms and stem and leaf diagrams, and were dealt with by deleting their entire responses from the data set. Although not all of them were deleted, the outliers that occurred for more than one observed variable were removed from the data. Normality of the data obtained for this study was determined by using the absolute values of the skewness and kurtosis of each latent construct, appropriate if between -2 and $+2$ (Tabachnick and Fidell, 1996). The study went further to ascertain normality of data using histograms and normal Q-Q Plots of each variable, where the outputs showed very slight deviations from normality for the variables, indicating that the data were largely normally distributed. After these preliminary analyses, the number of usable responses in the data reduced to 264 which was used in carrying out the SEM analysis. Table I presents the results for test for normality using skewness and kurtosis values.

Confirmatory factor analysis (CFA)

In order to test the factor structure of the variables, a CFA (measurement) model was developed to be tested. To obtain good model fit indices, the model was modified and the observed variables (items) that had low loading coefficients (below 0.6) on their latent constructs were deleted. However, at least two observed variables were maintained for each latent construct, based on the recommendation by Kenny (2016). The final measurement model is presented in Figure 1.

Variable	Mean	SD	Skewness	Kurtosis
Idealised influence	15.50	2.75	-0.500	0.009
Active MBE	8.35	2.73	0.283	-0.814
Safety Comp	7.35	0.91	-1.07	0.078
Safety Part	6.78	1.15	-0.480	-0.804

Table I.
Test for normality

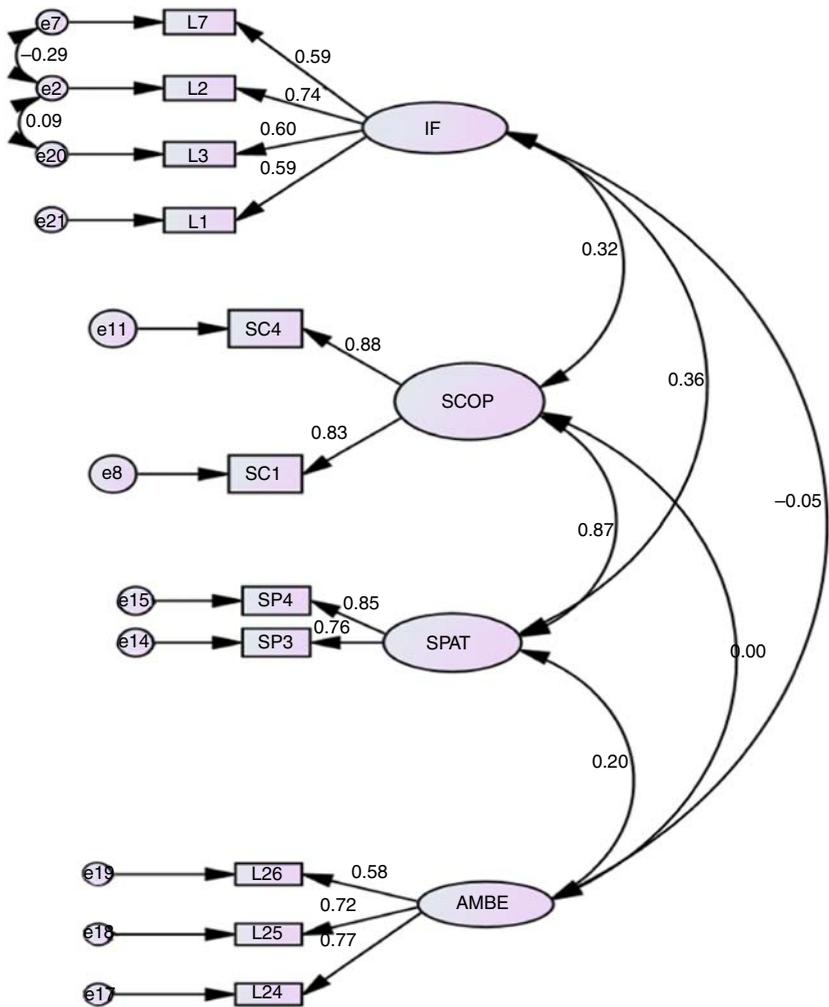


Figure 1.
Final CFA model with
standardised loadings

In assessing the model for fitness, the ratio of the χ^2 to the degree of freedom (CMIN/DF; χ^2/df), the goodness of fit (GFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardised root mean square residual (SRMR) were used as the fit indices. The final CFA (measurement) model had good model fit indices ($\chi^2/df = 2.468$, GFI = 0.943, CFI = 0.945, RMSEA = 0.075, SRMR = 0.056) measured against the benchmarks according to Hu and Bentler (1999).

Validity and reliability

Convergent validity was assessed using the average variance explained (AVE) values, while discriminant validity was ascertained using Fornell-Lacker procedure where discriminant validity is supported when the AVEs of the constructs are greater than the squared correlation coefficients between the constructs (Fornell and Larcker, 1981). Reliability was tested using the composite reliability values. Apart from MBE-A, all other

variables had AVE values above 0.50, as generally recommended. Malhotra and Dash (2011) maintained, however, that the AVE is too strict and thus may be difficult to obtain 0.50 for some constructs. Notwithstanding the strictness of the AVE, it is seen that the AVEs for all the variables were all greater than the squared correlation coefficients between the constructs thus ascertaining discriminant validity for all the constructs, according to Fornell and Larcker (1981). Furthermore, with regard to the composite reliability, all variables obtained values above 0.70, as generally recommended thus ascertaining their reliabilities. Table II presents the results for the validity and reliability tests.

Correlation analysis

Correlation analysis was done in SPSS among the latent constructs computed using the retained items after the CFA. Table III presents the zero-order correlation coefficients among all the variables in the study. The table shows a weak negative relationship between idealised influence and MBE-A ($r = -0.03, p = 0.00$) thus indicating little multicollinearity between the two independent variables. Linearity was also seen to exist between idealised influence and safety compliance ($r = 0.25, p = 0.00$), idealised influence and safety participation ($r = 0.24, p = 0.00$), and MBE-A and safety participation ($r = 0.15, p = 0.00$). However, MBE-A had no significant correlation with safety compliance ($r = 0.20, p = 0.37$). Safety compliance also correlated significantly with safety participation ($r = 0.71, p = 0.00$). All correlations were at 1 per cent significance level.

The structural model evaluation

A structural model was subsequently developed using the computed latent variables with their retained items in the final CFA (measurement) model. Age of respondents was used as a control variable in order to obtain good fit measures, and also because of its perceived effects on the safety behaviours of the respondents. The model is presented in Figure 2. Idealised influence and MBE-A were the predicting variables while safety compliance and safety participation were the outcome variables, represented as IDF, MBE-A, SCO and SPA, respectively.

The same model fit indices were used to assess the structural model as done for the measurement model. The figures for all the fit indices were excellent for the model ($\chi^2/df = 1.557$; GFI = 0.995; CFI = 0.995; RMSEA = 0.046; SRMR = 0.036) measured against the thresholds by Hu and Bentler (1999) (Figure 2).

Variable	CR	AVE	1	2	3	4	5
1. Idealised Influence	0.72	0.50	<i>0.63</i>				
2. Active MBE	0.84	0.72	0.35	<i>0.85</i>			
3. Safety Comp	0.78	0.65	0.32	-0.05	<i>0.80</i>		
4. Safety Part	0.73	0.48	0.87	-0.00	0.20	<i>0.69</i>	

Note: *Italic values are the squared AVEs*

Table II.
Assessment of
reliability and validity
of retained items

Variable	1	2	3	4
1. IDF	1			
2. MBE-A	-0.03**	1		
3. SC	0.25**	0.20	1	
4. SP	0.24**	0.15**	0.71**	1

Note: *,**Significant at 5 and 1 per cent levels, respectively

Table III.
Summary of bivariate
correlation analysis

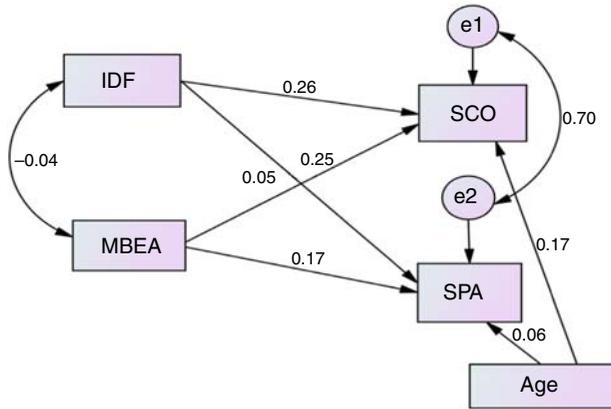


Figure 2.
Final structural model
with standardised
loadings

Summary of results

The first hypothesis was stated as:

H1. Idealised influence will predict safety compliance positively.

The results indicated that idealised influence predicted safety compliance positively ($\beta = 0.263, t = 4.499, p = 0.00$), implying that when supervisors exhibit more charisma, it is likely to increase the safety compliance behaviours of their subordinates. Thus, *H1a* was confirmed.

The second hypothesis was stated as:

H2. Idealised influence will predict safety participation positively.

The results showed that idealised influence predicted safety participation positively ($\beta = 0.252, t = 4.294, p = 0.00$), implying that when supervisors exhibit more charisma, it is likely to increase the safety participation behaviours of their subordinates. Thus, *H1b* was also confirmed.

The third hypothesis was stated as:

H2a. MBE-A will positively influence safety compliance.

The results of the analysis indicated that MBE-A did not have a significant influence on safety compliance ($\beta = 0.048, t = 0.815, p = 0.41$), implying that when supervisors closely monitor their subordinates, it had no significant influence on the employees' safety compliance behaviours. Thus, *H2a* was rejected.

The last hypothesis was stated as:

H2b. MBE-A will positively influence safety participation.

The analysis revealed that MBE-A had a positive influence on safety participation ($\beta = 0.170, t = 2.893, p = 0.00$), implying that when supervisors closely monitor their subordinates, their subordinates were likely to engage in extra-role safety behaviours. Therefore, *H2b* was confirmed.

Table IV presents the results for the hypotheses testing.

Discussion

The study investigated the extent to which idealised influence under transformational leadership and MBE-A under transactional leadership predict safety behaviours of employees in Ghana's power transmission sector. The first two findings of this study showed that

idealised influence positively predicted safety compliance and safety participation, respectively. This means that when supervisors show charisma, exhibit exemplary behaviours, and their subordinates trust and identify themselves with the supervisors, it influences the employees to comply with the safety rules, standards and procedures of the organisation as well as go the extra mile to engage in voluntary safety behaviours. These findings are consistent with that of Hoffmeister *et al.* (2014) who similarly found that idealised influence predicted safety behaviours positively. This may indicate that perhaps the dimension of idealised influence is the underlying reason for the extant research (Clarke, 2013; Fernández-Muñiz *et al.*, 2014; Jiang and Probst, 2016; Kapp, 2012; Lu and Yang, 2010; Mullen *et al.*, 2016; Smith *et al.*, 2016) that found that transformational leadership style had positive influences on safety behaviours. Hoffmeister *et al.* (2014) asserted that transformational leadership, due to its dimensions, is able to inspire and motivate subordinates to even go beyond safety requirements and exhibit safety citizenship behaviours, further indicating that idealised influence gives meaning to the other dimensions under transformational leadership, and that the other dimensions such as intellectual stimulation, individualised consideration and inspirational motivation may not be effective if idealised influence is separated. Again, contrastingly, Clarke (2013) posited that transformational leadership is more strongly related to safety participation than safety compliance because it enhances psychological empowerment and allows employees to identify with the organisation.

The third finding of this study indicated, rather contrary to expectation, that MBE-A had no significant influence on safety compliance. This means that when supervisors closely monitor the activities of their subordinates for mistakes in order to prevent or correct them, it has no significant influence on the employees' compliance with safety rules and procedures. This finding is contrary to the findings of Clarke (2013) and Martínez-Córcoles and Stephanou (2017) who found that active transactional leadership significantly predicted safety compliance. This finding is, however, consistent with that of Hoffmeister *et al.* (2014) who also found that MBE-A did not have any significant influence on safety compliance, and partly consistent with that of Fernández-Muñiz *et al.* (2014) who found that transactional leadership on the whole did not influence safety compliance. This finding confirms the assertions of some researchers (Kelloway *et al.*, 2006; Zohar, 2002) that the corrective and controlling form of leadership does very little or nothing at all in enhancing safety in organisations. Thus, although expected that such corrective form of leadership would influence compliance with safety regulations, this study found the contrary. The possible reason for this finding is that because this dimension involves active monitoring to prevent or correct mistakes, employees may choose to comply with the safety rules and regulations only when their supervisors are around to check them, and so may not necessarily comply with them because they feel the need to especially in times when the supervisors are not closely monitoring. It could also be that this close monitoring was more related to the achievement of their individual tasks and goals, rather than the undertaking of those tasks in a safe manner or in compliance with safety rules and regulations.

Model 1	Estimate	CR	SE
IDF→SC	0.263**	4.499	0.019
IDF→SP	0.255**	4.294	0.025
AMBE→SC	0.048	0.815	0.020
AMBE→SP	0.170**	2.893	0.025
Age→SC	0.172**	2.943	0.058
Age→SP	0.063	1.079	0.073

Notes: CR, critical ratio; SE, standard error. **Significant at 1 per cent level

Table IV.
Summary of results

Surprisingly, the last finding of the study indicated that MBE-A had a positive influence on safety participation. This means that when supervisors actively monitor employees' activities to correct or prevent mistakes, the employees tend to engage in extra-role, voluntary behaviours geared towards promoting safety. This finding is in line with those of Clarke (2013) and Martínez-Córcoles and Stephanou (2017) who found that the active part of transactional leadership had positive association with safety participation. This finding goes contrary to that of Hoffmeister *et al.* (2014) who found that MBE-A did not have any significant influence on safety participation. This finding also goes partly contrary to that of Fernández-Muñiz *et al.* (2014) who found that overall transactional leadership had no significant influence on safety participation. This finding is also inconsistent with assertions by researchers (Clarke, 2013; Hoffmeister *et al.*, 2014; Smith *et al.*, 2016) that transactional leadership, due to its dimensions of contingent rewards and MBE-A, is more likely to engender greater compliance with safety rules than voluntary safety behaviours from employees.

This last finding, however, presents a fresh and interesting contribution to the knowledge on safety leadership, especially with regard to the fact that this active monitoring part of transactional leadership was earlier found to have no influence on compliance. A possible explanation for this current finding could be that as a result of the close monitoring and emphasis on correcting mistakes in the undertaking of tasks, there is the heightened awareness to avoid errors and mistakes, and hence, employees may be encouraged to go out of their way, to take safety initiatives and engage in extra-role safety behaviours in undertaking their tasks in a safe manner. Nonetheless, it is worth noting that research (Christian *et al.*, 2009; Clarke, 2006) has shown that safety participation has a greater effect in reducing work-related injuries and accidents in organisations. Additionally, Fernández-Muñiz *et al.* (2014) in their study found that workers' active participation in improving health and safety at work has a positive effect on compliance with safety standards and procedures. Therefore, it is not farfetched to say that this finding is a positive indication of good workplace health and safety in the organisations under the influence of leadership behaviours.

Practical implications

Often times, research on safety leadership has focused on the overall influence of the full range leadership model on safety at the workplace with less attention on the individual dimensions under transformational and transactional and how they influence employee safety behaviours. Considering the ascertained influence that leadership profoundly has on an organisation's safety performance, this study reaffirms the importance of idealised influence and the corrective form of leadership in promoting employee safety behaviours. Thus, to ensure that employees comply with safety regulations and procedures and even exhibit extra-role, voluntary behaviours, leaders (supervisors) should endeavour to exhibit charisma and exemplary behaviours that engender trust and association from their subordinates. The findings also imply that active monitoring form of leadership that focuses on prevention and correction of mistakes can engender voluntary safety behaviours from employees but not compliance with minimum safety regulations. However, the literature indicates that voluntary safety behaviours have a greater tendency to reduce accidents and injuries, and may lead to compliance with rules. Hence, combining such charismatic and exemplary behaviours with corrective and active monitoring could go a long way to promote safety behaviours of employees thus promoting the overall safety performance of employees.

The context of the study in relation to the findings also presents good practical implications for policy makers. This study was undertaken in government institutions with engineers and technicians as the target population. In this regard, the findings are quite interesting considering the fact that the respondents' tasks are structured and the organisations are highly bureaucratic. One would expect that within such contexts, a controlling and corrective form of leadership would be dominant and influence safety

behaviours more. The importance of charismatic, exemplary and trustworthy behaviours of leaders is thus buttressed by this study's findings in a highly structured and bureaucratic context. As such, the organisations' policy makers should consider implementing programs geared towards developing leaders to exhibit such exemplary behaviours. In other words, for a developing country such as Ghana, these findings are relevant and insightful in the sense that most of the state-owned organisations are highly bureaucratic and thus they lean more towards well established structures and procedures. As such, controlling and corrective forms of leadership are quite prevalent since leaders would more likely resort to the use of such structures and procedures in controlling and influencing subordinate actions such as those relating to safety behaviours. However, this study implies that even in highly bureaucratic and structured work environments, the charismatic form of leadership is very important in ensuring employee safety and productivity, seeing that bad safety behaviours, accidents and injuries can cost the country millions. Again, taking cognisance of the scanty literature on the subject matter, generally, and more importantly, in Ghana, these findings are very insightful.

With regard to education, these findings can be very educative for other sectors of the country, as well as other developing countries with similar bureaucratic structures to encourage their superiors towards exhibiting charismatic and exemplary safety behaviours on the job. Thus, such sectors and countries would benefit more by empowering their leaders and developing them in exhibiting such behaviours rather than just focusing on structures and procedures.

With respect to society, leaders' exemplary and charismatic behaviours, when encouraged and developed, have the potential to influence subordinates' actions even beyond their safety behaviours to encompass other productive voluntary work behaviours, and this can propagate a culture of socially accepted behaviours in the country, both in and outside the work environments.

Theoretical implications

This study adds to the discourse on safety leadership, highlighting the importance of idealised influence to the transformational leadership construct and the MBE-A to the transactional leadership construct in promoting employee safety behaviours. It delves into the full range leadership model to investigate the influence of some dimensions on safety within the Ghanaian context. The study lends credence to the importance that researchers attach to idealised influence and active transactional leadership to the safety leadership literature. The study thus extends the theory of transformational and transactional leadership styles and its particular relationship with safety behaviours of workers, especially with regard to the role of charismatic/idealised influence in the leadership-safety interplay. Of greater interest is the potential of MBE-A to influence safety participation rather than safety compliance, contrary to expectations. This challenges the idea that controlling and corrective forms of leadership tend to offer little in influencing employees' safety behaviours.

Conclusion

Employees are considered the single most important asset for organisations in gaining and sustaining their competitive advantage (Armstrong, 2010). With this being said, it is incumbent on organisations to ensure that the safety of employees is paramount and at its optimum. The literature on safety of employees also deems leadership to be the strongest predictor. Therefore, organisations must ensure that leaders are adequately enlightened on how they could engender employee safety behaviours. This study shows the influence of practical leadership behaviours on employees' compliance with minimum safety regulations, and more importantly their engagement in voluntary safety behaviours in the Ghanaian context.

Limitations and directions for future studies

This study is limited with regard to the generalizability of its findings to other industries as it focused on one part of the energy sector in Ghana. Also, the quantitative method that was used could not reveal actual reasons that underlie the findings. Future studies could delve deeper into this by employing the qualitative method to triangulate and validate the findings of this study and help unearth further reasons for these findings. This study could also be replicated in other sectors to allow for comparisons and more conclusive arguments.

References

- Annan, J. (2010), "Occupational and Industrial Safety and Health in Ghana", available at: www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=197916 (accessed 8 August 2016).
- Armstrong, M. (2010), *A Handbook of Human Resource Management Practice*, 4th ed., Kogan Page, London.
- Avolio, B.J., Bass, B.M. and Jung, D.I. (1999), "Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire", *Journal of Occupational and Organizational Psychology*, Vol. 72 No. 4, pp. 441-462.
- Avolio, B.J., Sosik, J.J., Jung, D.I. and Berson, Y. (2003), "Leadership models, methods, and applications: small steps and giant leaps", in Borman, W.C., Klimoski, R., Ilgen, D.R. and Weiner, B. (Eds), *Handbook of Psychology*, John Wiley & Sons, New York, NY, pp. 277-307.
- Babin, B.J., Hair, J.F. and Boles, J.S. (2008), "Publishing research in marketing journals using structural equations modeling", *Journal of Marketing Theory and Practice*, Vol. 16 No. 4, pp. 279-285.
- Bass, B.M. (1985), *Leadership and Performance Beyond Expectations*, The Free Press, New York, NY.
- Bass, B.M. (1990), *Bass and Stodgill's Handbook of Leadership*, Free Press, New York, NY.
- Bass, B.M. and Avolio, B.J. (1990), *Transformational Leadership Development: Manual for the Multifactor Leadership Questionnaire*, Consulting Psychologist Press, Palo Alto, CA.
- Bass, B.M. and Avolio, B.J. (1997), *Full Range Leadership Development*, Mind Garden, Palo Alto, CA.
- Bass, B.M., Avolio, B.J., Jung, D.I. and Berson, Y. (2003), "Predicting unit performance by assessing transformational and transactional leadership", *Journal of Applied Psychology*, Vol. 88 No. 2, pp. 207-218.
- Brondino, M., Pasini, M. and Silva, S.A. (2012), "Multilevel approach to organizational and group safety climate and safety performance: co-workers as the missing link", *Safety Science*, Vol. 50 No. 9, pp. 1847-1856.
- Burns, J.M. (1978), *Leadership*, Harper and Row, New York, NY.
- Christian, M.S., Bradley, J.C., Wallace, J.C. and Burke, M.J. (2009), "Workplace safety: a meta-analysis of the roles of person and situation factors", *Journal of Applied Psychology*, Vol. 94 No. 5, pp. 1103-1127, available at: <http://dx.doi.org/10.1037/a0016172>
- Clarke, S. (2006), "The relationship between safety climate and safety performance: a meta-analytic review", *Journal of Occupational Health Psychology*, Vol. 11 No. 4, pp. 315-327.
- Clarke, S. (2013), "Safety leadership: a meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours", *Journal of Occupational and Organisational Psychology*, Vol. 1 No. 86, pp. 22-49.
- Clarke, S. and Ward, K. (2006), "The role of leader influence tactics and safety climate in engaging employees' safety participation", *Risk Analysis*, Vol. 26 No. 5, pp. 1175-1185.
- Dartey-Baah, K. (2015), "Resilient leadership: a transformational-transactional leadership mix", *Journal of Global Responsibility*, Vol. 6 No. 1, pp. 99-112, available at: <http://dx.doi.org/10.1108/JGR-07-2014-0026>
- Dartey-Baah, K. and Ampofo, E. (2016), "'Carrot and stick' leadership style: can it predict employees' job satisfaction in a contemporary business organisation?", *African Journal of Economic and Management Studies*, Vol. 7 No. 3, pp. 328-345.

- Dartey-Baah, K., Amponsah-Tawiah, K. and Sekyere-Abankwa, V. (2011), "Leadership and organisational culture: relevance in public sector organisations in Ghana", *Business and Management Review*, Vol. 1 No. 4, pp. 59-65.
- Donovan, S., Salmon, P.M. and Lenné, M.G. (2016), "Leading with style: a literature review of the influence of safety leadership on performance and outcomes", *Theoretical Issues in Ergonomics Science*, Vol. 17 No. 4, pp. 423-442, doi: 10.1080/1463922X.2016.1143986.
- Fernández-Muñiz, B., Montes-Peón, J.M. and Vázquez-Ordás, J.C. (2014), "Safety leadership, risk management and safety performance in Spanish firms", *Safety Science*, Vol. 70, December, pp. 295-307.
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, p. 39.
- Frazier, C.B., Ludwig, T.D., Whitaker, B. and Roberts, S.D. (2013), "A hierarchical factor analysis of a safety culture survey", *Journal of Safety Research*, Vol. 45, June, pp. 15-28.
- Gefen, D., Straub, D.W. and Boudreau, M. (2000), "Structural equation modeling techniques and regression: guidelines for research practice", *Communications of Association for Information Systems*, Vol. 4 No. 7, pp. 1-77.
- Gold, M.S. and Bentler, P.M. (2000), "Treatments of missing data: a Monte Carlo comparison of RBHDI, iterative stochastic regression imputation, and expectation-maximization", *Structural Equation Modeling*, Vol. 7 No. 3, pp. 319-355.
- Griffin, M.A. and Hu, X. (2013), "How leaders differentially motivate safety compliance and safety participation: the role of monitoring, inspiring, and learning", *Safety Science*, Vol. 60, December, pp. 196-202.
- Griffin, M.A. and Neal, A. (2000), "Perceptions of safety at work: a framework for linking safety climate to safety performance, knowledge, and motivation", *Journal of Occupational Health Psychology*, Vol. 5 No. 3, pp. 347-358.
- Griffin, R. (1999), *Management*, 5th ed., Houghton Mifflin Company, Boston, MA.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*, Prentice Hall, NJ.
- Hersey, P. and Blanchard, K.H. (1979), "Life cycle theory of leadership", *Training & Development Journal*, Vol. 33 No. 6, p. 94.
- Hofmann, D.A., Morgeson, F.P. and Gerras, S.J. (2003), "Climate as a moderator of the relationship between LMX and content specific citizenship behaviour: safety climate as an exemplar", *Journal of Applied Psychology*, Vol. 88 No. 1, pp. 170-178.
- Hoffmeister, K., Gibbons, A.M., Johnson, S.K., Cigularov, K.P., Chen, P.Y. and Rosecrance, J.C. (2014), "The differential effects of transformational leadership facets on employee safety", *Safety Science*, Vol. 62, February, pp. 68-78.
- Hu, L.T. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling*, Vol. 6 No. 1, pp. 1-55.
- Inness, M., Turner, N., Barling, J. and Stride, C.B. (2010), "Transformational leadership and employee safety performance: a within-person, between jobs design", *Journal of Occupational Health Psychology*, Vol. 15 No. 3, pp. 279-290.
- International Labour Organisation (2013), *Safety and Health at Work*, International Labour Organization Convention, Geneva.
- Jiang, L. and Probst, T.M. (2016), "Transformational and passive leadership as cross-level moderators of the relationships between safety knowledge, safety motivation, and safety participation", *Journal of Safety Research*, Vol. 57, June, pp. 27-32.
- Judge, A.T. and Piccolo, R.F. (2004), "Transformational and transactional leadership: a meta-analytic test of their relative validity", *Journal of Applied Psychology*, Vol. 89 No. 5, pp. 755-768.
- Kapp, E.A. (2012), "The influence of supervisor leadership practices and perceived group safety climate on employee safety performance", *Safety Science*, Vol. 50 No. 4, pp. 1119-1124.

- Kellerman, B. (1984), *Leadership: Multidisciplinary Perspectives*, Prentice-Hall, Eaglewood Cliffs, NJ.
- Kelloway, E.K., Mullen, J. and Francis, L. (2006), "Divergent effects of transformational and passive leadership on employee safety", *Journal of Occupational Health Psychology*, Vol. 11 No. 1, pp. 76-86.
- Kenny, A.D. (2016), "Multiple latent variable models: confirmatory factor analysis", available at: <http://davidakenny.net/cm/mfactor.htm> (accessed 17 April 2017).
- Little, R.J.A. and Rubin, D.B. (1987), *Statistical Analysis with Missing Data*, John Wiley and Sons, New York, NY.
- Lu, C. and Yang, C. (2010), "Safety leadership and safety behaviour in container terminal operations", *Safety Science*, Vol. 48 No. 2, pp. 123-134.
- Mahmood, R., Isa, M.M., Mustafa, M., Aziz, F.A. and Salleh, A. (2010), "Safety behaviour: the role of safety commitment", *International Conference on Business and Economic Research (ICBER), Conference Proceedings*, pp. 15-16.
- Malhotra, N.K. and Dash, S. (2011), *Marketing Research: An Applied Orientation*, Pearson, London.
- Martínez-Córcoles, M. and Stephanou, K. (2017), "Linking active transactional leadership and safety performance in military operations", *Safety Science*, Vol. 96, July, pp. 93-101.
- Martínez-Córcoles, M., Gracia, F.J., Tomás, I., Peiró, J.M. and Schöbel, M. (2013), "Linking empowering leadership to safety participation in nuclear power plants: a multilevel approach", *Safety Science*, Vol. 51 No. 1, pp. 293-301.
- Mullen, J., Kelloway, E.K. and Teed, M. (2016), "Employer safety obligations, transformational leadership and their interactive effects on employee safety performance", *Safety Science*, Vol. 91, January, pp. 405-412.
- National Safety Council (2010), *Injury Facts Book*, NSC 2010 ed., Author, Itasca, IL.
- Neal, A., Griffin, M.A. and Hart, P.M. (2000), "The impact of organizational climate on safety climate and individual behaviour", *Safety Science*, Vol. 34 Nos 1-3, pp. 99-109.
- Northouse, P.G. (2004), *Leadership Theory and Practice*, 3rd ed., Sage, Thousand Oaks, CA.
- Odumeru, J.A. and Ifeanyi, G.O. (2013), "Transformational vs transactional leadership theories: evidence in literature", *International Review of Management and Business Research*, Vol. 1 No. 2, pp. 355-361.
- Obiwuru, T., Okwu, A., Akpa, V. and Nwankere, I. (2011), "Effects of leadership style on organisational performance: a survey of selected small scale enterprises in Ikosi – Ketu council development area of Lagos State, Nigeria", *Australian Journal of Business and Management Research*, Vol. 1 No. 7, pp. 100-111.
- Pater, R. (2001), "Leadership skills for the 21st century", *Proceedings of 2001 ASSE Professional Development Conference and Exposition (CD-ROM), Session 631, Anaheim, CA*.
- Piavi, H., Kaija, L.S. and Jukka, T. (2009), "Global trend according to estimated number of occupational accidents and fatal work-related disease at region and country level", *Journal on Safety Research*, Vol. 40 No. 2, pp. 125-139.
- Prasad, B. and Junni, P. (2016), "CEO transformational and transactional leadership and organizational innovation", *Management Decision*, Vol. 54 No. 7, pp. 1542-1568.
- Smith, T.D., Eldridge, F. and DeJoy, D.M. (2016), "Safety-specific transformational and passive leadership influences on firefighter safety climate perceptions and safety behaviour outcomes", *Safety Science*, Vol. 86, July, pp. 92-97.
- Tabachnick, B.G. and Fidell, L.S. (1996), *Using Multivariate Statistics*, 3rd ed., Harper Collins, New York, NY.
- Towers Watson (2010), "Building a safer workplace: minimize risk, maximize safety", available at: www.towerswatson.com/research/1353 (accessed 8 August 2016).
- Trottier, T., Van Wart, M. and Wang, X. (2008), "Examining the nature and significance of leadership in government organizations", *Public Administration Review*, Vol. 68 No. 2, pp. 319-333.
- Vinodkumar, M.N. and Bhasi, M. (2010), "Safety management practices and safety behaviour: assessing the mediating role of safety knowledge and motivation", *Accident Analysis Preview*, Vol. 42 No. 6, pp. 2082-2093.

-
- Warrilow, S. (2012), "Transformational leadership theory – the 4 key components in leading change and managing change", available at: http://EzineArticles.com/?expert_Stephen_ (accessed 10 October 2016).
- Winston, B.E. and Patterson, K. (2006), "An integrative definition of leadership", *International Journal of Leadership Studies*, Vol. 1 No. 2, pp. 6-66.
- Wu, C., Fang, D. and Li, N. (2015), "Roles of owners' leadership in construction safety: the case of high-speed railway construction projects in China", *International Journal of Project Management*, Vol. 33 No. 8, pp. 1665-1679.
- Wu, C., Wang, F., Zou, P.X.W. and Fang, D. (2016), "How safety leadership works among owners, contractors and subcontractors in construction projects", *International Journal of Project Management*, Vol. 34 No. 5, pp. 789-805.
- Wu, T.C., Chen, C.H. and Li, C.C. (2007), "Correlation among safety leadership, safety climate and safety performance", *Journal of Loss Prevention in the Process Industries*, Vol. 6 No. 3, pp. 261-272.
- Yang, C.C., Wang, Y.S., Chang, S.T., Guo, S.E. and Huang, M.F. (2009), "A study on the leadership behavior, safety culture, and safety performance of the healthcare industry", *World Academy of Science, Engineering and Technology*, Vol. 53 No. 1, pp. 1148-1155.
- Yukl, G. (2006), *Leadership in Organisations*, 6th ed., Prentice Hall, NJ.
- Zohar, D. (2002), "The effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups", *Journal of Organisational Behaviour*, Vol. 23 No. 1, pp. 75-92.

Further reading

- Annan, J.S., Addai, E.K. and Tulashie, S.K. (2015), "A call for action to improve occupational health and safety in Ghana and a critical look at the existing legal requirement and legislation", *Safety and Health at Work*, Vol. 6 No. 2, pp. 146-150.
- Barling, J., Loughlin, C.A. and Kelloway, E.K. (2002), "Development and test of a model linking safety-specific transformational leadership and occupational safety", *Journal of Applied Psychology*, Vol. 8 No. 3, pp. 74-85.
- Bollen, K.A. (1989), *Structural Equations with Latent Variables*, John Wiley and Sons, New York, NY.
- Crisci, A. (2012), "Estimation methods for the structural equation models: maximum likelihood, partial least squares, generalized maximum entropy", *Journal of Applied Quantitative Methods*, Vol. 7 No. 2, pp. 3-17.
- Dartey-Baah, K. (2016), "Goal integration through transformational leadership: a panacea to Ghana's public sector corruption menace", *Journal of Global Responsibility*, Vol. 7 No. 1, pp. 4-25.
- Hair, J.F. Jr., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis with Readings*, 5th ed., Prentice Hall, Englewood Cliffs, NJ.
- Lei, M. and Lomax, R.G. (2005), "The effect of varying degrees of non-normality in structural equation modeling", *Structural Equation Modeling*, Vol. 12 No. 1, pp. 1-27.
- Martínez-Córcoles, M., Gracia, F., Tomás, I. and Peiró, J.M. (2011), "Leadership and employees' perceived behaviours in a nuclear power plant: a structural equation model", *Safety Science*, Vol. 49 Nos 8-9, pp. 1118-1129.
- Neal, A. and Griffin, M.A. (2006), "A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels", *Journal of Applied Psychology*, Vol. 91 No. 4, pp. 946-953.

Corresponding author

Kwasi Dartey-Baah can be contacted at: kdartey-baah@ug.edu.gh

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com