

# Leadership in the safety sense: where does perceived organisational support fit?

Leadership in  
the safety  
sense

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## Abstract

**Purpose** – The purpose of this paper is to examine leaders' influence on the safety behaviours of employees and the possible mediating role of perceived organisational support (POS), focussing on transformational and transactional leadership.

**Design/methodology/approach** – Data were gathered through a survey from 264 engineers and technicians in the power transmission subsector in Ghana and analysed using structural equation modelling.

**Findings** – The analyses revealed that transformational leadership influenced safety behaviours positively while transactional leadership had no significant influence on employees' safety behaviours. POS also mediated between the leadership styles and safety behaviours.

**Practical implications** – Supervisors need to exhibit more transformational leadership behaviours and organisations need to show support for their employees' wellbeing in order to aid supervisors' influence on employees' safety behaviours, especially if the leaders are more transactional in nature.

**Originality/value** – The study addresses a dearth in literature and highlights the influences of leadership styles on the safety behaviours of the employees, as well as the importance of the organisation to commit to employees' support and safety so as to enhance their good perceptions and consequently elicit better performance from them.

**Keywords** Ghana, Mediation, Structural equation modelling, Perceived organizational support, Employee safety behaviours, Transformational and transactional leadership

**Paper type** Research paper

## Introduction

Leadership is an irreplaceable component in the development and success of every organisation. Indeed, in every organisation, leaders define the tone and culture (Batista-Taran *et al.*, 2009); thus, organisational performance is largely shaped by leadership. Amagoh (2009) iterates that effective leadership is needed for organisations to be competitive. However, research on leadership (Cullen-Lester *et al.*, 2017; Day, 2001; DeRue and Ashford, 2010; Eberly *et al.*, 2013) has shown over the years that the concept of leadership transcends individual leaders and involves subordinates or followers who engage in processes of social relationships resulting in the formation of groups or dyads. Indeed, more recent theories of leadership such as leader-member exchange (Dansereau *et al.*, 1975; Graen and Uhl-Bien, 1995); transformational and transactional (Burns, 1978; Bass, 1985); and authentic leadership (Luthans and Avolio, 2003; Avolio and Gardner, 2005) lend credence to the importance of follower involvement and development in the leadership process. However, leadership development, in ensuring successful goal attainment, must necessarily consider the safety of followers. Martínez-Córcoles *et al.* (2012) maintain that empirical literature on safety research highlight leadership as the strongest antecedent of organisational safety performance. Furthermore, literature on safety leadership in organisations have focussed greatly on transformational and transactional leadership styles (Barling *et al.*, 2002; Fernández-Muñiz *et al.*, 2014; Griffin and Hu, 2013; Hoffmeister *et al.*, 2014; Lu and Yang, 2010); where these two leadership styles are regarded as the bedrock of the safety leadership construct (Wu *et al.*, 2015). This study contributes to the dearth in literature on safety leadership by examining influence of these leadership styles on



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safety behaviours, as well as examining another mechanism, perceived organisational support (POS), through which leadership affects safety in organisations in the power transmission subsector of Ghana. The study is needed in the Ghanaian context due to the scanty literature on the subject matter. Also, the chosen sector presents some insightful and new implications for the leadership-safety nexus, as well as the social exchange theory (SET) and organisational support theory, due to its public nature and largely bureaucratic systems of operations. The findings therefore inform actors in the energy sector in Ghana on ways to ensure employee safety and reduce accidents, that is, through leaders' appropriate behaviours and adequate organisational support.

### **Problem statement**

Indeed, even in the broader leadership literature, the safety of subordinates/followers has not been adequately addressed. Donovan *et al.* (2016) maintain that the understanding of the actual contribution of safety leadership to safety outcomes and behaviours is at best considered elementary; further stating that in the current safety leadership literature, there exists very minimal consensus on which leadership style has the most influence on safety, with some of the findings revealing overlaps in safety leadership styles. This is notwithstanding the millions of recorded deaths and accidents at work as a result of inadequate safety and health management and the poor safety behaviours of employees in organisations (Eurostat, 2015; ILO, 2013) as well as the billions of dollars that are lost to workplace accidents and injuries annually in countries such as USA (Towers Watson, 2010). It is therefore imperative to examine the influence of leadership styles on safety of followers.

Additionally, while majority of the safety leadership literature have examined the influence of transformational and transactional leadership styles on safety behaviours, none of the studies examined the mediating effect of POS on the relationships between the two leadership styles and safety behaviours, considering the fact that POS has been found to have a profound influence on employees' safety behaviours (Mearns and Reader, 2008; Michael *et al.*, 2005; Puah *et al.*, 2016).

Moreover, this study examines the relationships among these variables in the light of the SET which has been greatly and directly associated with organisational support theory. The SET which is considered as one of the oldest theories of social behaviour, has been widely used in literature on social studies disciplines (Nunkoo, 2016). This theory is based on social exchanges between humans, where one favourable treatment results in another favourable treatment in return (Blau, 1964; Cropanzano and Mitchell, 2005; Nunkoo, 2016). In relation to this study, it can be explained that when leaders and the organisation exhibit good, supportive behaviours towards employees and their safety, the employees respond in like manner by exhibiting positive compliant and voluntary safety behaviours. However, Cropanzano *et al.* (2017) critically reviewed this theory and concluded that although the SET is widely employed, it lacks theoretical precision and therefore, reduces its utility in predicting human behaviour in organisations. There is thus the need for more studies in more contexts that reaffirm the relevance and implications of the SET in organisational behaviours, thereby boosting its precision and utility.

The purpose of this study was therefore to investigate the relationships among transformational leadership, transactional leadership and employee safety behaviours in the Ghanaian power transmission subsector; and subsequently examine the effect of POS on these relationships.

### **Theoretical underpinnings and hypotheses development**

#### *Transformational and transactional leadership styles*

According to Nye (2014), research on leadership theory have focussed greatly on the transformational leadership over the past few decades. Burns (1978) defined transformational

leadership as a style where “leaders and followers raise one another to higher levels of morality and motivation” (p. 20). Bass (1985) builds on Burns’ theory and asserts that, the transformational leader acts on “deeply held personal value systems” (p. 150). Bass (1985) further posits that the transformational leader motivates followers through creating perceptions of the importance of specific organisational goals.

On the other hand, transactional leadership, according to Burns (1978), appeals to followers’ parochial interests. Dartey-Baah and Ampofo (2016) iterate that transaction means an exchange between parties. This leadership style relies on “exchanges” between a leader and subordinates, where the leaders specifies and provides rewards in exchange for subordinates’ performance (Bass *et al.*, 2003; Trottier *et al.*, 2008).

### *Safety behaviours*

Martínez-Córcoles *et al.* (2011) indicate that safety behaviours have been chosen as a way of measuring safety outcomes. Researchers on safety behaviours generally agree on Griffin and Neal’s (2000) classification of safety behaviours as safety compliance and safety participation. Safety compliance deals with adherence to safety rules, procedures and policies that actually improve the safety condition of an organisation. On the other hand, 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.

### *Perceived organisational support (POS)*

POS refers to “employees’ perceptions of how much their organisations value their presence and contributions to work, and their general well-being” (Eisenberger *et al.*, 1986, p. 501). Epitropaki and Martin (2013) explain that POS is a reflection of an employer’s commitment to employees in the forms of respect, care, affiliation and tangible resources such as benefits and wages; whereby employees return such commitment in the form of increased efforts towards organisational goals. Baran *et al.* (2012) state that POS regards the support given by the organisation, as generally perceived by the employees while Rhoades and Eisenberger (2002) see it as the degree of belief held by employees concerning the value placed on their safety and wellbeing by their organisation.

### *Leadership styles and safety behaviours*

Clarke (2013) indicates that the literature on safety leadership is skewed more towards a focus on transformational leadership than on transactional leadership. The study conducted by Lu and Yang (2010) found that aspects of transformational leadership, motivation and concern, related positively to safety behaviours. Similarly, Kapp’s (2012) study revealed that transformational leadership was associated with higher levels of safety behaviours. That of Hoffmeister *et al.* (2014) also indicated that dimensions of transformational leadership such as idealised influence and inspirational motivation predicted safety behaviours positively. Also, the study by Dartey-Baah and Addo (2018) indicated that idealised influence positively predicted safety behaviours. Furthermore, the study by Mullen *et al.* (2017) sought to assess safety-specific transformational leadership as moderator on the relationship between perceived employer safety obligations and employee safety performance. Drawing on SET, the study showed in both a cross-sectional and longitudinal methods that safety-specific transformational leadership positively influenced safety behaviours (compliance and participation). Additionally, Molnar *et al.* (2019) conducted a study through a survey using 269 employees in a paper mill company, and found that transformational leadership significantly and positively predicted safety behaviours. Similarly, Lingard *et al.* (2019) found, in their study on leadership styles and

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safety behaviours in the Australian construction industry, that transformational leadership influenced employee safety behaviours positively. Findings from other studies such as those of Fernández-Muñiz *et al.* (2014) and Smith *et al.* (2016) similarly indicated that transformational leadership predicted safety behaviours positively.

Based on these, the current study hypothesised that:

*H1a.* Transformational leadership style will significantly predict safety behaviours.

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With regard to transactional leadership, findings are somewhat inconclusive. Some studies such as those of Fernández-Muñiz *et al.* (2014) and Smith *et al.* (2016) found that transactional leadership did not correlate significantly with the two safety behaviours. Jiang and Probst (2016) similarly found no significant correlation between passive leadership and safety participation. Nonetheless, other studies such as that of Clarke (2013) found that transactional leadership had a significant relationship with safety compliance; that of Lu and Yang (2010) which revealed that safety policy, an aspect of transactional leadership, correlated positively with safety participation; and those of Hoffmeister *et al.* (2014) and Kapp (2012) which revealed that contingent management, a major dimension under transactional leadership, had significant relationships with employee safety behaviours. Similarly, Lingard *et al.* (2019) found, in their study on leadership styles and safety behaviours in the Australian construction industry, that transactional leadership influenced employee safety behaviours positively. Dartey-Baah and Addo found in their study that another dimension under transactional leadership, active management-by-exception, had a positive influence on safety participation but did not significantly predict safety compliance. However, Molnar *et al.* (2019) in their survey of 269 employees in a paper mill company found that active management-by-exception influenced safety outcomes significantly but negatively.

Based on these, the current study hypothesised that:

*H1b.* Transactional leadership style will significantly predict safety behaviours.

#### *Leadership styles and POS*

Leaders are considered as representatives or agents of the organisation, acting on behalf of the organisation (Armstrong, 2010; Wayne *et al.*, 1997); having a duty to direct and evaluate employees' performance and giving support to employees (Eisenberger *et al.*, 1986; Rhoades and Eisenberger, 2002). Epitropaki and Martin (2013) in their study found that both transformational leadership and transactional leadership were positively and significantly correlated to POS. Additionally, Tremblay and Gibson (2016) assessed the role of humor use by the supervisors in the relationship between transactional leader behaviours, perceived supervisor and organisational support, and citizenship behaviours. The study found that transactional behaviours positively predicted perceived supervisor and organisational support among employees. More recently, Engelbrecht and Olorunjuwon (2019) conducted a study to assess the influence of transformational leadership on turnover intention through POS and organisational trust in public and private sectors in the Western Cape, Eastern Cape and Gauteng provinces of South Africa. The results of the study showed that transformational leadership influenced POS positively.

Although very little research has been done on the relationships between the two leadership styles and POS, conclusions can be drawn from literature that positive relationships exists between them.

Based on this, the current study hypothesised that:

*H2a.* Transformational leadership will significantly and positively predict POS.

*H2b.* Transactional leadership will significantly and positively predict POS.

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*POS and safety behaviours*

Organisations begin an exchange relationship with employees when they show genuine support and concern for their wellbeing, and value their contributions. Consequently, employees, by the SET and the norm of reciprocity, are most likely return such gestures by exhibiting positive work-related behaviours and attitudes, even going beyond what is required of them to demonstrate extra-role behaviours. Therefore, when management shows concerns for the employees' safety and health, employees tend to believe that the organisation is positively inclined towards their safety and health climate (Turner *et al.*, 2008); and the employees, in reciprocity, tend to improve and promote safety and health behaviours (Puah *et al.*, 2016; Rhoades and Eisenberger, 2002). Empirical researches point to the fact that POS has a significant influence on the safety behaviours of workers. The study by Puah *et al.* (2016) in Malaysia revealed that support from the organisation, supervisor and co-workers significantly predicted the safety compliance of employees. Similarly, Gyekye and Salminen (2007) also found a positive association between POS and workers' compliance with safety policies in their study in Ghana. Furthermore, Mearns and Reader (2008) also found in UK that higher levels of perceived organisational and supervisory health support were associated with higher levels of safety citizenship behaviours. In the study by Mullen *et al.* (2017), employees were seen to perceive support from their organisations through the performance of safety obligations by these organisations, and this in turn influenced their safety behaviours and performance positively. Moreover, Lee *et al.* (2019) showed in their study that organisations that facilitate knowledge sharing and positive safety climate promote perceptions of support among the employees which can enhance employees' safety behaviours and attitudes. Lastly, Quartey (2017) examined employee safety behaviours in the Ghanaian beverage industry and found that positive organisational culture created a perception of support from organisations which positively influenced employees' safety behaviours.

Based on these studies, the current study hypothesised that:

*H3.* POS will significantly predict safety behaviours.

*POS as a mediator between leadership styles and safety behaviours*

Research on the mediating role of POS in the leadership-safety relationship is almost non-existent. However, as indicated earlier, POS has been found to have a significant positive influence on employees' safety behaviours (Lee *et al.*, 2019; Mearns and Reader, 2008; Michael *et al.*, 2005; Mullen *et al.*, 2017; Puah *et al.*, 2016; Quartey, 2017). Rhoades and Eisenberger (2002) have indicated that employees tend to associate support from their leaders or supervisors with support from their organisations. This assertion has been supported empirically as leadership styles such as transformational and transactional have correlated positively with POS (Engelbrecht and Olorunjuwon, 2019; Epitropaki and Martin, 2013; Tremblay and Gibson, 2016). The study argues that due to the influence that POS has been found to have on safety behaviours and the influence of leadership styles on POS, when employees receive encouragement, motivation, inspiration, genuine concern for individual wellbeing (transformational) as well as rewards (transactional) from their leaders, these employees will perceive support from their organisations, and this POS will in turn drive their behaviours and attitudes towards promoting safety and health at the workplace, thus enhancing employees' safety compliance and safety participation. Based on this, the study hypothesised that:

*H4a.* POS will mediate the relationships between transformational leadership style and safety behaviours.

*H4b.* POS will mediate the relationships between transactional leadership style and safety behaviours.

## Method

### *Approach and procedure*

The study was a cross-sectional one that sought to understand the relationships that exist between leadership styles, safety behaviours and POS among engineers and technicians from different organisations in the power transmission sector in Ghana; chosen because of the nature of tasks they undertake as they are exposed and prone to health and safety hazards. The study employed the quantitative approach to gather and analyse data. Data were thus obtained from 264 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 88 per cent. The respondents assessed the behaviours of their leaders (immediate supervisors), their own safety behaviours as well as their perceptions of support from their organisations. 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 in this study. Leadership styles of supervisors were measured using the Multifactor Leadership Questionnaire (MLQ) Short Form-5X. The MLQ (5X) is a 31 item scale developed by Avolio *et al.* (1999) based on the original scale by Bass and Avolio (1990). The first 19 items measure transformational leadership behaviours ( $\alpha = 0.92$ ) while the last 12 items measure transactional leadership behaviours ( $\alpha = 0.70$ ) with their respective dimensions. Each behaviour was rated on a five-point scale ranging from "Not at all" (1) to "Frequently, if not always" (5). A sample of the items is: "[My supervisor] goes beyond self-interest for the good of the group". Safety behaviours were measured using the eight-item Safety Behaviour Scale by Neal *et al.* (2000). 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 includes; "I attend safety meetings and briefings". POS was measured using the eight-item scale by Eisenberger *et al.* (1986), which is a shorter version of the original 36 items developed by the researchers to measure employees' POS ( $\alpha = 0.83$ ). A sample of the items is: "My organisation cares about my opinions". Responses were obtained on a seven-point scale ranging from (1) "Strongly Disagree" to (7) "Strongly Agree".

### *Data 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 was employed in examining the relationships among the variables and testing of the hypotheses. Babin *et al.* (2008) indicate that SEM has become popular as a result of its ability to measure latent variables and test relationships between several latent variables simultaneously. It is this ability that makes SEM a better tool for analysis than tools such as regression (Bollen, 1989). This tool was thus used to test both the directional and mediational hypotheses. However, the four-step procedure by Baron and Kenny (1986) was followed in conducting the mediation; which was subsequently validated and confirmed using the percentile confidence interval bootstrapping method as recommended by some researchers (MacKinnon *et al.*, 2007) that criticise the four-step procedure for missing some true indirect effects. The structural model calculated the estimates for the indirect effects and bootstrapping was employed in testing the significance of the indirect effect estimates.

## Results

### *Preliminary analysis*

Simple frequencies were used in checking if any missing values were in the data set. The analysis showed missing values under some of the observed variables. 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 (Little and Rubin, 1987); hence needed to be dealt with (Hair *et al.*, 2006). The Expectation Maximisation method (Gold and Bentler, 2000) was thus used to estimate the missing values for each of the latent constructs in the study; transformational leadership, transactional leadership, safety compliance, safety participation and POS; eventually showing no missing values in the data set.

Normality of the data obtained for this study was determined by using the absolute values of the skewness and kurtosis of each latent construct. Data are normally distributed if the absolute values of the skewness and kurtosis of the variables are between  $-2$  and  $+2$  (Tabachnick and Fidell, 1996). This analysis was performed in SPSS and the results are presented in Table I showing that all the latent constructs had absolute skewness and kurtosis values between  $-2$  and  $+2$  indicating a normal distribution in the data set.

### *Confirmatory factor analysis*

In order to test the factor structure of the variables as well as the dimensions of the leadership styles confirmatory factor analysis (CFA) was performed. Thus, the initial 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). All factor loadings had high coefficients (above 0.6).

### *Model fit indices for the CFA model*

The fit indices used in this study were; the ratio of the  $\chi^2$  to the Degree of freedom (CMIN/DF;  $\chi^2/df$ ), 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). The figures for these fit indices were measured against the benchmarks according to Hu and Bentler (1999) and Hair *et al.* (1998). The final CFA (measurement) model, comprising five factors, had good model fit indices ( $\chi^2/df = 2.775$ , GFI = 0.907, CFI = 0.916, RMSEA = 0.082, SRMR = 0.064).

These fit measures indicate that the model fits the data obtained. This final model was compared with four other models; a four-factor model (transformational and transactional leadership were combined into one factor); a three-factor model (transformational, transactional and safety compliance were combined into one factor); a two-factor model (transformational, transactional, safety compliance and safety participation were combined into one factor); and a one-factor model (all variables were combined into a single factor). The fit indices of these subsequent models were; for the four-factor model ( $\chi^2/df = 2.891$ ,

Variable	Mean	SD	Skewness	Kurtosis
Transformational	71.16	10.68	0.030	-0.558
Transactional	33.25	4.94	-0.102	-0.538
Safety comp	16.72	2.50	-0.305	-0.758
Safety part	13.35	1.86	-0.402	-1.068
POS	33.44	3.36	0.721	0.326

**Notes:** Safety Comp, Safety compliance; Safety Part, safety participation; POS, perceived organisational support

**Table I.**  
Test for normality

GFI = 0.903, CFI = 0.907, RMSEA = 0.085, SRMR = 0.067); for the three-factor model ( $\chi^2/\text{df} = 6.386$ , GFI = 0.777, CFI = 0.722, RMSEA = 0.143, SRMR = 0.122); for the two-factor model ( $\chi^2/\text{df} = 6.590$ , GFI = 0.736, CFI = 0.705, RMSEA = 0.146, SRMR = 0.155); and for the one-factor model ( $\chi^2/\text{df} = 6.820$ , GFI = 0.724, CFI = 0.690, RMSEA = 0.149, SRMR = 0.151), indicating that the first model with five factors had the best fit indices.

#### *Validity and reliability*

Validity in this study was ascertained using convergent and discriminant validity. The average variance extracted (AVE) was used to check convergent validity. As generally recommended, the AVE must be at least 0.50 indicating that at least half of the variance in the items is explained by their construct. Malhotra and Dash (2011) maintained however that the AVE is too strict and thus may be difficult to obtain 0.50 for some constructs. With regard to discriminant validity, the Fornell-Larcker procedure was employed; where discriminant validity is supported when the square roots of 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. As generally recommended, a composite reliability of at least 0.70 is enough to establish reliability. The results of the validity and reliability analyses are presented in Table II.

It is seen that all the variables had CR of at least 0.70 thus ascertaining their reliabilities. Apart from transactional leadership and POS, all other variables had AVE values above 0.50. Notwithstanding the strictness of the AVE (Malhotra and Dash, 2011), 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).

#### *Correlation analysis*

Correlation analysis was done in SPSS among the latent constructs computed using the retained items after the CFA, as well as the demographic variables. Table III presents the zero-order correlation coefficients among all the variables in the study. It was observed that positive significant correlations exist between all the latent constructs under study, all at 1 per cent level of significance. With regard to the two leadership styles, a positive relationship is also seen and the correlation coefficient ( $r$ ) of 0.46 indicates low multicollinearity between the two independent variables in this study.

#### *The structural models*

Structural models were subsequently developed using the computed latent variables with their retained items in the final CFA (measurement) model. Precisely, two models were developed to test the hypothesised relationships between the latent constructs in this study; the first model consisted of the direct hypothesised relationships and the second model

Variable	CR	AVE	1	2	3	4	5
1. Transformational	0.81	0.59	<i>0.76</i>				
2. Transactional	0.70	0.45	-0.57	<i>0.67</i>			
3. Safety comp	0.84	0.73	0.31	-0.23	<i>0.85</i>		
4. Safety part	0.79	0.66	0.39	-0.26	0.80	<i>0.81</i>	
5. POS	0.72	0.49	0.53	-0.65	0.55	0.66	<i>0.70</i>

**Table II.**

Assessment of reliability and validity of retained items

**Notes:** Safety Comp, Safety compliance; Safety Part, safety participation; POS, perceived organisational support; CR, composite reliability; AVE, average variance extracted. Fornell-Lacker procedure for discriminant validity (square roots of AVE in italic)

Variable	1	2	3	4	5	6	7	8	9
1. TR	1								
2. TS	0.46**	1							
3. SC	0.29**	0.19**	1						
4. SP	0.31**	0.18**	0.71**	1					
5. POS	0.39**	0.38**	0.42**	0.46**	1				
6. Gender	-0.06	-0.15**	-0.16**	-0.17**	-0.10	1			
7. Age	-0.03	-0.02	0.16**	0.04	0.12*	-0.28**	1		
8. Education	0.02	0.17**	-0.12*	-0.05	0.12*	-0.02	-0.22**	1	
9. Years	-0.07	-0.05	0.11*	0.04	0.04	-0.19**	0.85**	-0.22**	1

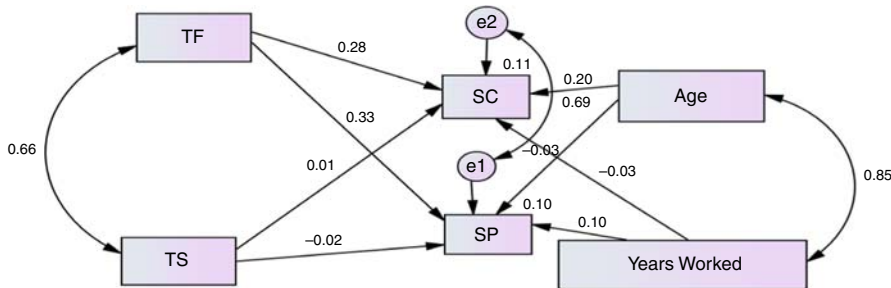
**Notes:** TR, Transformational; TS, transactional; SC, safety compliance; SP, safety participation; POS, perceived organisational support. \*,\*\*Significant at 5 and 1 per cent, respectively

**Table III.** Summary of bivariate correlation analysis

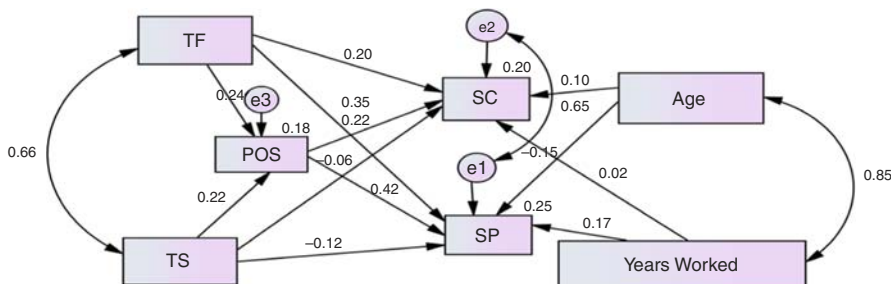
consisted of the direct as well as mediational hypothesised relationships. Transformational and transactional leadership were the predictors, safety compliance and safety participation were the outcomes variables, and POS was the mediating variable. These are represented in the models as TF, TS, SC, SP and POS, respectively. Age of respondents as well as the number of years that respondents have worked were used as control variables in order to obtain good fit measures, and also because of their perceived effects on the safety behaviours of the respondents. The models are presented as Figures 1 and 2.

*Model fit indices of the structural models*

The structural models were also checked for model fit using the same fit indices used for validating the CFA model. The figures for these fit indices for both the direct relationships model and the mediational relationships model were measured against the benchmarks by



**Figure 1.** Final structural model (directional)



**Figure 2.** Final structural model with mediation

Hu and Bentler (1999) and Hair *et al.* (1998). The figures for all the fit indices were excellent for both models ( $\chi^2/df = 1.548, 1.818$ ; GFI = 0.997, 0.988; CFI = 1.000, 0.994; RMSEA = 0.000; 0.056, SRMR = 0.029, 0.039).

### *Hypotheses testing*

The evaluation of the structural models produced estimates for each hypothesised path. The summary of findings is presented in Table IV:

*H1a.* Transformational leadership style will significantly predict safety behaviours.

The analysis revealed that transformational leadership significantly and positively predicted safety compliance ( $\beta = 0.282, t = 3.630, p = 0.00$ ) and safety participation ( $\beta = 0.325, t = 4.158, p = 0.00$ ). Thus, *H1a* was accepted:

*H1b.* Transactional leadership style will significantly predict safety behaviours.

It was shown in the analysis that transactional leadership had no statistically significant influence on safety compliance ( $\beta = 0.013, t = 0.165, p > 0.05$ ) and safety participation ( $\beta = -0.023, t = -0.298, p > 0.05$ ). Thus, *H1b* was rejected:

*H2a.* Transformational leadership will significantly influence POS.

The analysis revealed that transformational leadership significantly and positively predicted POS ( $\beta = 0.241, t = 3.226, p = 0.00$ ). *H2a* was therefore accepted:

*H2b.* Transactional leadership will significantly influence POS.

The analysis of this hypothesis indicated that transactional leadership predicted POS positively and significantly ( $\beta = 0.219, t = 2.931, p = 0.00$ ). *H2b* was similarly accepted:

*H3.* POS will influence safety behaviours significantly.

	Estimate	CR	SE
Model 1 (Direct)			
TF → SC	0.282**	3.630	0.014
TF → SP	0.325**	4.158	0.017
TS → SC	0.013	0.165	0.034
TS → SP	-0.023	-0.298	0.043
Age → SC	0.202	1.829	0.109
Age → SP	-0.030	-0.270	0.138
Years → SC	0.034	-0.311	0.146
Years → SP	0.096	0.864	0.114
Model 2 (Mediational)			
TF → SC	0.199**	2.656	0.013
TF → SP	0.223**	3.061	0.016
TS → SC	-0.064	-0.858	0.032
TS → SP	-0.116	-1.601	0.040
TF → POS	0.241**	3.226	0.022
TS → POS	0.219**	2.931	0.054
POS → SC	0.423**	5.784	0.036
POS → SP	0.351**	7.186	0.045
Age → SC	0.105	0.999	0.102
Age → SP	-0.148	-1.462	0.127
Years → SC	0.024	0.230	0.108
Years → SP	0.166	1.637	0.134

**Notes:** TR, Transformational; TS, transactional; SC, safety compliance; SP, safety participation; POS, perceived organisational support; Years, number of years worked; CR, critical ratio. \*,\*\*Significant at 5 and 1 per cent, respectively

**Table IV.**  
Summary of results

The testing of this hypothesis revealed that POS significantly and positively influenced safety compliance ( $\beta=0.423$ ,  $t= 5.784$ ,  $p=0.00$ ) and safety participation ( $\beta=0.351$ ,  $t= 7.186$ ,  $p=0.00$ ). Thus, *H3* was accepted:

*H4a.* POS will mediate the relationship between transformational leadership style and safety behaviours.

After the mediating variable was included in the model, it was revealed that transformational leadership still significantly and positively predicted safety compliance ( $\beta=0.199$ ,  $t= 2.656$ ,  $p=0.00$ ) and safety participation ( $\beta=0.223$ ,  $t= 3.061$ ,  $p=0.00$ ). This indicated that POS partially mediated the relationships between transformational leadership and the safety behaviours. It is seen in Table V that the indirect effect estimate from transformational leadership through POS to safety compliance was significant ( $0.016$ ,  $p < 0.01$ ). Similarly, the indirect effect estimate from transformational leadership through POS to safety participation was also significant ( $0.025$ ,  $p < 0.01$ ). This strengthens and validates the partial mediation result obtained from the Baron and Kenny (1986) procedure. Thus, *H4a* is accepted:

*H4b.* POS will mediate the relationship between transactional leadership style and safety behaviours.

Since transactional leadership did not significantly predict the safety behaviours, it failed to satisfy the first condition by Baron and Kenny (1986) for mediation test. Nonetheless, the study went further to analyse and calculate the indirect effects estimates and test them for significance using the bootstrapping method. Therefore, although the Baron and Kenny (1986) approach indicated no possible mediation, the results in Table VI shows that the indirect effect estimate from transactional leadership through POS to safety compliance was significant ( $0.032$ ,  $p < 0.01$ ). Similarly, the indirect effect estimate from transactional leadership through POS to safety participation was also significant ( $0.049$ ,  $p < 0.01$ ). This indicates that there exist some indirect effects between transactional leadership and safety behaviours through POS, contrary to the result from the Baron and Kenny (1986) approach. On this basis, *H4b* was accepted.

## Discussion

The first finding of the study showed that transformational leadership had a positive influence on safety behaviours of the engineers and technicians. This finding is in line with

Relationship	Estimate	LP	UP	Sig.
TF→POS→SC	0.016	0.005	0.030	0.001
TF→POS→SP	0.025	0.009	0.044	0.001

**Notes:** TR, Transformational; SC, safety compliance; SP, safety participation; POS, perceived organisational support; LP, lower percentile; UP, upper percentile

**Table V.**  
Percentile bootstrapping CI method (indirect effects) for transformational

Relationship	Estimate	LP	UP	Sig.
TS→POS→SC	0.032	0.011	0.054	0.003
TS→POS→SP	0.049	0.017	0.081	0.003

**Notes:** TS, Transactional; SC, safety compliance; SP, safety participation; POS, perceived organisational support; LP, lower percentile; UP, upper percentile

**Table VI.**  
Percentile bootstrapping CI method (indirect effects) for transactional

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several other empirical studies (Dartey-Baah and Addo, 2018; Fernández-Muñiz *et al.*, 2014; Hoffmeister *et al.*, 2014; Kapp, 2012; Lu and Yang, 2010; Mullen *et al.*, 2017; Smith *et al.*, 2016) that found that transformational leadership style and its aspects and dimensions predicted and related positively to safety behaviours. However, these findings go partially contrary to those of Clarke (2013) and Jiang and Probst (2016) who only found a positive influence of transformational leadership on safety participation but not on safety compliance. Hoffmeister *et al.* (2014) iterates that transformational leadership, due to its particular dimensions has the tendency to influence safety behaviours positively, especially safety participation, because it inspires and motivates subordinates go beyond task requirements and exhibit citizenship behaviours. This finding reaffirms the SET, in that, when leaders exhibit transformational leadership behaviours, they initiate an exchange relationship based on favourable treatment as a result of dimensions such as individualised consideration and inspirational motivation. The employees, in turn, are compelled by the principle of reciprocity to respond in favourable manner by exhibiting positive safety behaviours in the organisations.

The second finding indicated that transactional leadership did not have any significant influence on safety behaviours. This finding is consistent with that of Fernández-Muñiz *et al.* (2014) and Smith *et al.* (2016) who found that transactional leadership and its passive dimension did not correlate significantly with the two safety behaviours. Additionally, the current finding is in partial agreement with that of Jiang and Probst (2016) who found no significant correlation between passive leadership and safety participation. However, this finding goes contrary to those of Clarke (2013), Hoffmeister *et al.* (2014), Kapp (2012), Lu and Yang (2010) who found that transactional leadership and its dimension of contingent reward had a significant relationship and influence on safety behaviours; and partially contrary to that of Dartey-Baah and Addo (2018) which indicated that active management-by-exception predicted safety participation but not safety compliance. This finding is however not too surprising with regard to the context of the study. The power transmission subsector is largely state-owned and highly bureaucratic; thus, the supervisors are not so much empowered to specify rewards for performance. Thus, that “exchange” relationship of rewards for performance which is the crux of transactional leadership (Burns, 1978; Bass, 1985) is largely absent. This perhaps contributed greatly to this finding. Also, it could be inferred from the SET that perhaps the management-by-exception dimensions under transactional leadership do not create adequate favourable treatments towards employees that warrant a reciprocal response of positive safety behaviours from these employees.

The third and fourth findings of this study indicated that transformational leadership and transactional leadership, respectively, had positive significant influences on POS. This current finding is in line with that of Epitropaki and Martin (2013) who found that both transformational leadership and transactional leadership positively and significantly correlated with POS. This confirms the assertion made by Armstrong (2010) and Wayne *et al.* (1997) that leaders are considered as representatives or agents of the organisation who act on behalf of the organisation.

Furthermore, the study found that POS had positive influences on the safety behaviours. This means that when employees perceive that the organisation has their wellbeing at heart and shows concern for their safety by providing needed assistance, they tend to exhibit good safety behaviours at work by complying with safety rules and undertaking voluntary safety behaviours and initiatives. This current finding is in agreement with other studies (Gyekye and Salminen, 2007; Mearns and Reader, 2008; Puaah *et al.*, 2016) who found that support from the organisation significantly related with and predicted the safety behaviours of employees positively. Inference can also be drawn from the SET, as POS has been linked to the SET and the principle of reciprocity, in that, when organisations show support and

concern, employees in turn exhibit good behaviours and better performance such as safety compliance and safety participation.

The last two findings of the study indicated that POS partially mediated the relationships between transformational leadership and safety behaviours, as well as the relationships between transactional leadership and safety behaviours. This meant that when employees receive supports from their supervisors in terms of coaching, mentoring, inspiration and active monitoring, they cause them to exhibit good safety behaviours directly; these supports from the supervisors also cause them to develop greater positive perceptions about the organisation's concern and support for their safety and wellbeing, and in turn causes them to exhibit good safety behaviours at work. Taking the previous findings into consideration, this current finding is not surprising. POS has been found to have a significant positive influence on employees' safety behaviours (Mearns and Reader, 2008; Michael *et al.*, 2005; Puah *et al.*, 2016) and transformational and transactional leadership have been found to correlate positively with POS (Epitropaki and Martin, 2013). By inference, transformational and transactional leadership can cause employees to exhibit good behaviours by influencing good and positive perceptions that they have about the organisation; hence the current finding of the study. These last findings similarly give credence to SET. It could be said that when leaders exhibit supportive behaviours in the light of transformational and to some extent, transactional leadership, they create a positive image of support from the organisation in the eyes of the employees thus initiating an exchange relationship; and the employees reciprocate this by exhibiting good safety behaviours which contribute to the organisation.

### **Practical implications**

The study presents real implications for organisations that seek to embark on leadership and follower development. Seeing the importance attached to followers in the organisation, and the seemingly inadequate and inconclusive literature on employee safety as an antecedent of leadership in organisations, this study brings to light interesting findings to enhance the influence of leadership on employee safety in organisations. These findings indicate that transformational leadership is more likely to elicit safety behaviours from workers compared to transactional leadership. The practical implications for leaders in organisation is that in relating with their subordinates, supervisors may want to exhibit more charisma and idealised behaviours and attitudes, motivation, inspiration and consideration for employees' individual needs if they wish to elicit safety behaviours from their workers, especially behaviours that are voluntary. The results also imply that organisations need to show support for their employees' wellbeing in order to aid supervisors' influence on employees' safety behaviours, especially if the leaders are more transactional in nature such that they closely monitor their subordinates in order to correct errors and mistakes in the conduct of their work.

Furthermore, the study and its findings serve as an educational material for organisations, reaffirming the relevance of organisations to consider their subordinates and their safety and health when developing their leaders. In other words, the study provokes the thoughts of managements of organisations in the Ghanaian power sector as well as other sectors in the country on the importance of leadership development; and more essentially, on the importance to necessarily consider the safety of their employees, in their quests to develop the employees in their organisations.

Socially, this study creates the awareness of the inextricable nature of leadership and followership in any social setting including organisations; and thus the imperative nature of ensuring followers' safety through the development of the leadership practice and framework in every social setting.

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### Theoretical implications

The study presents compelling arguments for the consideration of employee safety at work in the entire leadership and follower development process of every organisation. Furthermore, it elaborates on two well-known styles of leadership, highlighting their influence on the safety behaviours of the employees. Notably, the study contributes to the inconclusive literature on leadership-safety relationship. Also, the role of the organisation in ensuring good leadership that considers employees' safety at work is indicated clearly in this study. The study also lends credence to the SET, affirming its arguments in the leadership, safety and organisational support nexus in the Ghanaian setting.

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### Conclusion

In a nutshell, leaders are needed to set the direction for every organisation, and the development of the entire leadership process in an organisation is not a matter of choice but a necessity for every organisation. Literature has shown that followers are essential for every leadership process, and an integral part of the organisation. By extension, their health and safety at work is non-negotiable and must be ensured by their organisations. This study highlights the influences of leadership styles on the safety behaviours of the employees, as well as the importance of the organisation to commit to employees' support and safety so as to enhance their good perceptions. The implications of this study are therefore real and useful for practice and literature on the development of leadership and employees in ensuring organisational success.

### Limitations and suggestions for future studies

The sample size and the focus on one subsector poses some limitations to this study with regard to generalisation. Future studies could replicate this study in other sectors as well as in non-state controlled contexts. Also, future studies could employ qualitative techniques to investigate the reasons for the found relationships in this study.

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