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ROLE STRESS AS A PREDICTOR OF SAFETY CLIMATE AND SAFETY PERFORMANCE

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Abstract

This paper aims to explore the relationship between larger organisational factors, specifically role stress and safety outcomes specifically, safety climate and safety performance. The purpose of this research is to expand our understanding of the 'human factor' in organisational accidents. Questionnaires were sent out to a population of 1800 employees of a large company and 44.4% were returned. 46.6% of the population worked in a field or workshop environment while the remainder worked in an office environment. The hypothesised model was tested using structural equation modelling. A mediated model and partially mediated model were competed against each other with the latter being the better fitting model (df (1)= 6.22, $p<.05$). The results indicated that safety climate predicted safety performance, but that safety climate was also predicted by role stress. Role stress also directly predicted safety performance. The implications of these finding are that the antecedents of accidents are not only safety specific, but encompass larger organisational factors.

ROLE STRESS AS A PREDICTOR OF SAFETY CLIMATE AND SAFETY PERFORMANCE

INTRODUCTION

Traditionally, the factors that have been considered the major approaches to organisational safety performance have been technical, mechanical, legislative and ergonomic (Bohle & Quinlan, 2000). As such, occupational safety research and practice has been largely focused on altering the organisational environment to decrease risk (Lee, 1998; Weyman, Clarke, & Cox, 2003). Researchers are increasingly realising however that whilst attempts to engineer and mechanise risk out of organisations have been successful and have resulted in an improvement in accident rates, such rates have reached a plateau (Lee, 1998; Weyman et al., 2003). This plateau has been attributed to the human factor in organisational systems, including human error and volitional unsafe behaviours (Reason, Parker, & Lawton, 1998). Further, the interaction that occurs between the human factor and larger organisational factors, and the subsequent creation of safety attitudes and perceptions (i.e. safety climate) has become the focus of much safety research and practice (Seo, Torabi, & Blair, 2004).

The aim of this paper is to contribute to the evolution of occupational safety literature through analysing the relationship between organisational factors or the micro level of analysis, and human factors or the individual level of analysis (Hofmann, Jacobs, & Landy, 1995; House, Rousseau, & Thomas-Hunt, 1995). This paper additionally aims to focus on the importance of effective management practices on achieving high levels of safety performance (Zacharatos, Barling, & Iverson, 2005).

In achieving its aims this paper will review and empirically explore three relationships. The first relationship to be reviewed is between safety climate and safety performance. Organisational safety climate has shown to be a good predictor of safety performance outcomes and is, as a consequence, relatively dominant in occupational safety research (Guldenmund, 2000). Additionally, larger organisational factors are increasingly being related to safety performance outcomes (Zacharatos et al., 2005). Therefore the second relationship to be explored is between role stress, as a larger organisational factor (Jex & Beehr, 1991), and safety performance. Finally, in order to develop a greater understanding of the context in which safety climate evolves, the relationship between role stress and safety climate will be explored.

SAFETY CLIMATE

Safety climate is a common concept used in the measurement of individual perceptions and attitudes toward safety (Guldenmund, 2000). One of the earliest and most frequently cited definitions of safety climate is that provided by Zohar (1980) who applied climate theory earlier proposed by Schneider (1975). Zohar (1980) outlined that safety climate represents a set of molar perceptions associated with safety that provides cues for behaviour. Glennon (1982 as cited in Guldenmund, 2000, p. 228) further added that safety climates include perceptions that “have a direct impact upon their behaviour to reduce or eliminate danger.” Coyle, Sleeman and Adams (1995, p. 247) further add that safety climate is “the objective measurement of attitudes and perceptions toward occupational health and safety issues.”

Coyle et al. (1995) stated that safety climate measures are important to the development of effective management strategies. They further argue that despite the lack of stability and agreement on the measures used in research, climate measures are a valuable proactive tool for planning and managing organisational safety. Lee (1998) additionally argues that safety climate provides not only a starting point for determining ‘good’ and ‘bad’ or ‘low accident’ and ‘high accident’ organisations but also enables safety to be mapped over time as it improves, therefore providing an indication of the value of safety interventions.

Climate perceptions result from the experience and events that occur during the life of the organisation and as such it is argued that there will be a degree of homogeneity in these perceptions. Further, these perceptions provide a context in which people gauge the appropriateness of their behaviour (Schneider, 1975). Schneider (1975) further argues that such climates enable researchers to understand how organisational practices and procedures affect individual behaviour.

SAFETY CLIMATE AND SAFETY PERFORMANCE

Past research has indicated that relationships exist between organisational safety climate and a range of safety performance indicators. As a dependent variable, safety performance has been measured through a range of safety outcomes including accident rates (e.g Mearns, Whitaker, & Flin, 2003), injuries (e.g. Zohar, 2002), safety behaviour (e.g. Neal, Griffin, & Hart, 2000) and safety commitment or involvement (e.g. Cheyne, Oliver, Tomás, & Cox, 2002). Before commencing an empirical review of this research it is important to briefly discuss the nature of the dependent variable, safety performance.

There are a range of problems associated with the use of accident records that dissuades researchers from applying them as the dependent safety performance variable. Firstly accidents occur rarely, making their applicability to cross sectional research limited. Secondly, questions have been raised concerning the validity of accident records (Pransky, Snyder, Dembe, & Himmelstein, 1999). Finally, a primary aim of safety climate research is to be predictive and to provide managers with a source of information that will enable them to monitor and improve organisational safety. While accident and injury statistics are reactive, safety performance indicators such as self report measures of safety behaviour, safety participation and safety activities data is feedforward (Flin, Mearns, O'Connor, & Bryden, 2000). Further, these broader measures of safety performance represent our best predictor of accidents and injuries (Mearns, Flin, Gordon, & Fleming, 2001).

In one of the earlier studies of safety climate, Zohar (1980) found that safety climate differentiated between organisations with different levels of safety, and that a more positive safety climate predicted more positive safety outcomes. Díaz and Cabrera (1997) conducted comparative research across three different work groups within the same airport and found that those groups with higher safety climate scores also had higher levels of safety. Garavan and O'Brien (2001) found significant positive relationships between the safety climate and a range of positive safety behaviour factors, while Varonen and Mattila (2000) found a negative relationship between safety climate and accidents and a positive relationship with workplace safety. Research conducted by Mearns et al. (2003) produced similar results.

Through applying structural equation modelling, research conducted by Tomás et al. (1999) resulted in further support for the relationship between safety climate and accidents, while Neal et al. (2000) confirmed the relationship between safety climate and safety participation. Cheyne et al. (1998; 2002) tested and confirmed an architecture of safety climate factors, while also achieving support for the relationship between these distinct safety climate factors and participation in safety activities.

Based on the empirical evidence provided by past research the following hypothesis has been made:

H1: Safety climate will predict safety performance.

SAFETY MANAGEMENT

Traditional approaches to the management of occupational safety are being increasingly criticised because of their development in isolation from the remainder of organisational systems and performance indicators (Beckmerhagen, Berg, Karapetrovic, & Willborn, 2003; Weinstein, 1996). In traditional approaches to the management of occupational safety the onus of responsibility for safety is most often placed on a specific person (i.e. workplace health and safety officer) and is oriented toward technical objectives and compliance with safety policies and procedures (Weinstein, 1996). In contrast, contemporary safety management systems aim to inspire and motivate individuals to perform at optimum standards not only in terms of production or quality but also safety (Barling, Kelloway, & Iverson, 2003; Beckmerhagen et al., 2003). To be successful in such endeavours managers must use strategies that extend beyond compliance, and begin to make safe operations and safe behaviour the responsibility and performance objective of all employees (Barling et al., 2003; Petersen, 1994).

Contemporary safety management therefore requires a focus on the management of individual safety performance and also an understanding of the organisational antecedents of accidents. As such, while the safety climate concept has become prominent in occupational safety research and practice, occupational safety research has expanded beyond the boundaries of safety specific explanations of accidents. Consequently issues such as leadership (Barling, Loughlin, & Kelloway, 2002; Hofmann & Morgeson, 1999; Zohar, 2002), organisational commitment and support (Barling & Hutchinson, 2000; Hofmann & Morgeson, 1999), job security (Probst, 2002; Probst & Brubaker, 2001), job satisfaction, and job design (Barling et al., 2003; Hechanova-Alampay & Beehr, 2001; Parker, Axtell, & Turner, 2001) have become increasingly prominent in research as antecedents of safety performance outcomes. The experience of role stress has also featured prominently in occupational stress research and in particular as a reason given for not behaving safely (Hofmann et al., 1995; Lawton, 1998; Mullen, 2004; Reason et al., 1998).

Role stress

The concept of role stress stems from the theory associated with role expectations, which are based on individual experiences and the way meaning is assigned to messages and expectations communicated to the individual by others (Jex & Beehr, 1991). Research exploring the relationship between role stressors and safety climate or safety performance has increased in recent years.

In an early study examining accidents at sea, Wagenaar and Groeneweg (1987) found that time pressure, the push for production and short-cutting safety processes significantly contributed to accidents. Similarly, in his analysis of deaths on oil rigs, Wright (1986) found that the pressure to speed up work and to complete tasks as quickly as possible were also significant dangers in the workplace. Hofmann et al. (1995) also argued that the push for production outweighed the motivation and expectation to behave safely. Mullen (2004) revealed that many of the subjects in her study felt that there was simply not enough time to follow safety procedures. Participants in Mullen's (2004) study also indicated that at times the pressure to complete the job, by both managers and co-workers, dissuaded safe behaviour. Factors such as time pressure, a high workload and the need to find a quicker way of working were also major causes of safety violations in a study conducted by Lawton (1998).

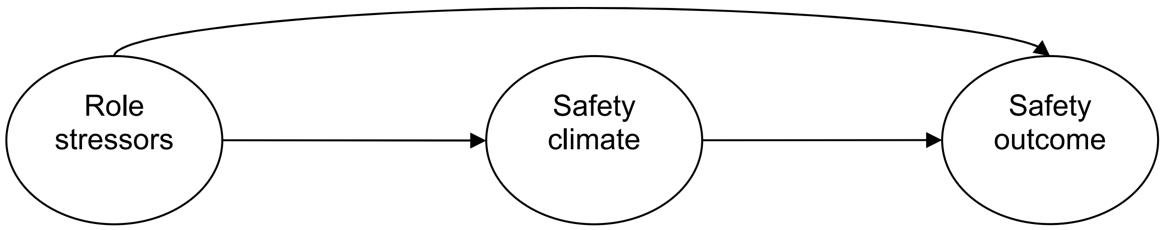
Each of these issues relates to the individuals perception of their role and also contributes to the individuals perception of organisational climate, particularly in terms of whether safety is considered to be as important or less important that other organisational factors, such as production. An individuals' perception of his/her job or role in the organisation is a significant component of his/her perception of the organisation itself. Neal et al. (2000), Silva, Lima, and Baptista (2004) and DeJoy, Schaffer, Wilson, Vandenberg and Butts (2004) each propose that the characteristics of the organisational climate provide context for the creation of a more specific climate such as the safety climate. Considering this argument therefore, the following hypotheses have been made:

H2: Role stress will predict safety climate.

H3: Role stress will predict safety performance.

Based on the three hypotheses, the model to be tested is as follows:

Figure 1: Hypothesised model



METHODS

Sample

A total of 1800 questionnaires were administered to employees from a large organisation employing approximately 3000 employees in total. 800 completed questionnaires were returned representing a 44.4% response rate. The demographics of the research sample were such that 74.8% were male and 25.2% female; 53.4% worked predominantly in an office environment, while 46.6% worked in a workshop or out in the field. In terms of employee status, 75% of the group classified themselves at the basic employee level, 14% at the supervisor/team leader level, 6.5% at the manager level, 1.3% at the senior manager and 3.1% at the general manager level.

Data collection

The distribution of this survey was managed by members of the research site who liaised continually with the researcher. Workgroups were randomly selected for participation in this project. Each workgroup was posted a set of questionnaires, separate informed consent forms and return envelopes. The questionnaire was composed of a range of items, both positively and negatively worded, representing the major research constructs.

Measurement

A six-point Likert scale ranging from *strongly agree* (1) to *strongly disagree* (6), was used to measure the participants' perceptions on each item. The items used to represent each variable were adapted from existing measures. Alterations were made to the items based on their appropriateness to the population and suggestions provided by a liaison person employed by the research site. Cronbach's alpha was calculated for each of the scales (Cronbach, 1951).

Safety climate
The safety climate items were adapted from the work of Neal, Griffin and Hart (2000) and Cheyne, Oliver, Tomás and Cox (2002). The items were written to represent six dimensions, which are listed along with example items. 1. *Management's commitment to safety,* e.g. 'I feel that all levels

of management at X always make sure that my workmates and I continually focus on improving safety'. 2. *Safety communication,* e.g. 'I feel uncomfortable discussing safety issues with my direct supervisor or team leader'. 3. *Safety standards and goals,* e.g. 'The improvement of safety performance is an important goal of my workplace'. 4. *Environmental risk,* e.g. 'I am always mindful of the risk in my work environment'. 5. *Safety systems,* e.g. 'The safety systems, policies, and practices in my workplace are effective'. 6. *Safety knowledge and training,* e.g. 'I am confident in my ability to perform my job in a safe manner'.

Following exploratory factor analysis, three safety climate factors remained; safety management (α = .88), safety standards (α = .75) and safety communication (α= .67). Aside from safety communication, each of the reliability coefficients was sufficient (i.e. >.07). Improvements to the safety communication scale were sought through the deletion of items, however none could be made. Analysis of the measurement model to further test the adequacy of this scale, in conjunction with the theoretical importance of the concept, resulted in the decision to retain the safety communication factor.

Safety performance

The safety performance items were adapted from the work of Neal, Griffin and Hart (2000) and Cheyne, Oliver, Tomás and Cox (2002). The items were written to represent two safety performance dimensions, safety behaviour and safety involvement. An example item of safety behaviour is I only use machinery and equipment that I am licensed to operate'. An example of safety involvement is I endeavour to play an active role in safety-related decisions within my work environment'.

Two safety performance factors emerged from the exploratory factor analysis, safety reporting and behaviour (α= .76) and safety involvement and proactivity (α= .81). They were renamed to reflect slight changes in emphasis within the construct.

Role stress

The role stress items were adapted from the psychological climate measures developed by Jones and James (1979), and Koys and DeCotiis (1991). Following exploratory factor analysis, one role stress factor emerged with a reliability coefficient equal to .75. Example items include "I feel that the demands of my job are sometimes too much for me to handle" and "I understand how my job contributes to the achievement of workplace objectives". The role stress items were not restricted to one aspect of roles, for example role conflict or role overload. These items also tapped into the extent to which the individual was challenged by the role, and the extent to which they perceived their role as important. This justifies use of the term role stress, as opposed to a specific type of role stress (i.e. role overload, role conflict)[1].

ANALYSIS

Following exploratory factor analysis, the items relating to the role stress and safety performance factors were grouped into item parcels (Russell, Kahn, Spoth, & Altmaier, 1998). The item parcels were created by summating and entering the mean score for a group of items. The process of grouping items involves calculating the item-total correlation and grouping items together such that the item parcel reflected each construct to an equal degree (Russell et al., 1998). There are a number of advantages to using parcels, but in this specific study they have had the effect of reducing the idiosyncrasies or anomalies in individual items and reducing the instance of Heywood cases (Russell et al., 1998).

[1] The role stress items which featured in the questionnaire completed by participants were both positively and negatively worded. However all items were positively coded prior to analysis and as a result the relationship between the role stress factor and others is such that the higher the role stress score the less role stress being experienced.

The safety climate construct is a multidimensional construct and therefore, as opposed to developing items parcels, a safety climate latent construct was created. This latent construct was developed by aggregating the scores of the items associated with each of the factors (i.e. safety management, safety standards and safety communication).

Descriptive statistics and intercorrelations between the three aggregated safety climate constructs, two safety performance factors and the role stress factor are outlined in Table 1.

Table 1: Descriptive statistics and intercorrelations between the three safety climate factors (i.e. safety management, safety standards and safety communication), the two safety performance factors (safety involvement and proactivity and safety reporting and behaviour) and the role stress factor

	Mean	SD	1	2	3	4	5	6
1. Safety management	4.56	.69	*.88*					
2. Safety standards	4.26	.84	.449**	*.75*				
3. Safety communication	4.23	.80	.573**	.288**	*.66*			
4. Safety involvement and proactivity	4.84	.52	.375**	.287**	.376**	*.81*		
5. Safety reporting and behaviour	4.29	.82	.442**	.672**	.344**	.455**	*.76*	
6. Role stress	3.58	.85	.291**	.330**	.173**	.111**	.301**	*.75*

Note: Scale reliabilities can be found on the diagonal, in italics.

**p <.01

Analysis initially commenced with examination of the fit of the measurement model, followed by structural equation modelling to test the hypotheses. The measurement model, provides an indication of whether the items attached to each unobserved construct are significant predictors of that construct (Ho, 2000). The fit of the structural equation model will be assessed using incremental fit indices (e.g. NFI, RFI, IFI, TLI and CFI) and parsimonious fit indices (e.g. PNFI and AIC).

RESULTS

Before examining the fit of the measurement model, it is important to consider the characteristics of the correlations between the latent constructs (see Table 2).

Table 2: Correlation matrices of the relationships between the latent constructs

Correlation	Estimate
Safety climate ↔ Role stress	.472
Safety climate ↔ Safety involvement and proactivity	.519
Safety involvement and proactivity ↔ Role stress	.125
Role stress ↔ Safety reporting and behaviour	.375
Safety climate ↔ Safety reporting and behaviour	.933
Safety involvement and proactivity ↔ Safety reporting and behaviour	.574

Correlation coefficients above .8 are considered as indicators of multicollinearity. Multicollinearity is an important statistical assumption that must be tested for when conducting regression analysis such as that conducted in structural equation modelling (Tabachnick & Fidell, 2001). Upon examination of the correlation matrix, there is one correlation estimate that is unacceptably high. The relationship between safety climate and safety reporting and behaviour (.933) indicates that these factors are multicollinear. Such high correlations have the potential to confound any further analysis and decrease the value of the structural equation model, consequently they must be taken into account during analysis or taken out prior to further analysis (Ho, 2000).

Conceptually, the relationship between the safety climate and safety reporting and behaviour variables exemplifies the connection between the creation of safety expectations or standards, and the behaviours that meet such standards. Statistically however, the relationship will confound the model because it becomes increasingly unclear which of the two factors is dependent and which is independent. Therefore, the dependent variable, safety reporting and behaviour, has been deleted from further analysis.

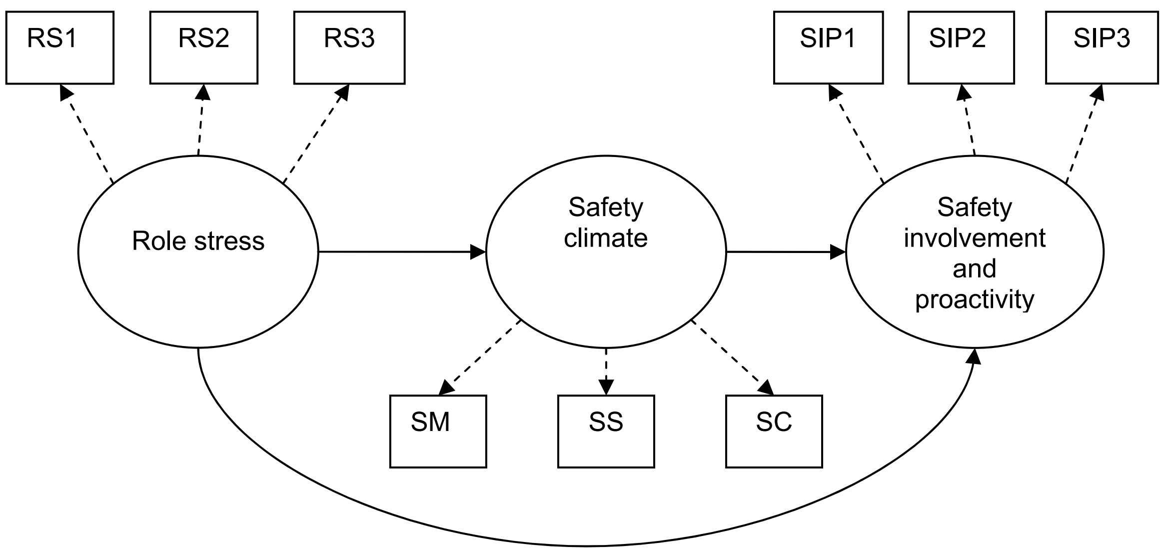
Having deleted the problematic safety performance factor the measurement model provides a good fit to the data. The chi-square value was not significant which is more likely to be a representation of the sample size than a reflection of model fit (N= 800, df= 24) = 123.66, $p<.05$, ns. The fit indices did indicate a well fitting model: NFI=.94, RFI=.92, IFI=.96, TLI=.94, CFI=.96

and GFI=.95. The standardised perimeter estimates for the measurement model are presented in Table 3. The hypothesised model, reflecting the alteration in dependent variable, is reflected in Figure 2.

Table 3: Standardised perimeter estimates for measurement model

			Estimate
Safety climate	→	Safety management (SM)	.808
Safety climate	→	Safety standards (SS)	.538
Safety climate	→	Safety communication (SC)	.669
Safety involvement and proactivity	→	SIP1 (item parcel)	.752
Safety involvement and proactivity	→	SIP2 (item parcel)	.756
Safety involvement and proactivity	→	SIP3 (item parcel)	.825
Role stress	→	RS1 (item parcel)	.683
Role stress	→	RS2 (item parcel)	.643
Role stress	→	RS3 (item parcel)	.815

Figure 2: Hypothesised structural equation model



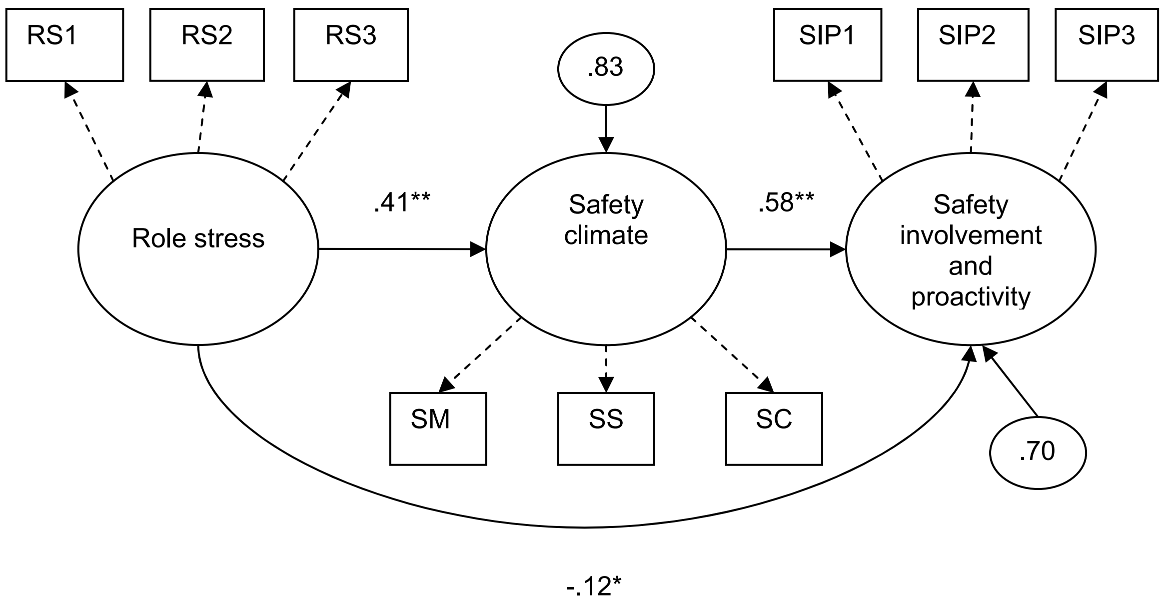
In order to gain a better insight into the process through which macro factors within the organisational environment impact individual level factors, two models will be competed against each other. Each of the models is nested within Figure 2 and the first model is a partially mediated model in which paths are present between role stress and the outcome variable, safety involvement and proactivity. The second model is a fully mediated model where the paths between role stress and the outcome variable are removed.

The results of data analysis indicated that both models provide a good fit to the data. The chi-square score for both the partially mediated model (N= 800, df= 24) = 123.66, p<.05, and fully mediated model (N= 800, df= 25) = 129.88, p<.05, were insignificant due to sample size. The fit indices for the partially mediated model indicates an excellent fit; NFI=.95, RFI=.92, IFI=.96, TLI=.93, CFI=.96, GFI=.97, RMSEA= .07 and PNFI=.63. The RMSEA, which is a measure of parsimony, is perhaps a little high (Browne & Cudeck, 1993). The fit indices for the fully mediated model also indicate a very good fit; NFI=.94, RFI=.92, IFI=.95, TLI=.93, CFI=.95, GFI=.97, RMSEA=.07 and PNFI=.66. The RMSEA is again perhaps a little high.

In order to determine which if the two models is a better fit, comparison of the fit indices, parsimony and the difference between the chi-squared values must be considered. The fit indices are very similar indicating that both models are a good fit to the data. The results of the chi-squared difference test however does indicate that the partially mediated model is a better fit than the fully mediated model (df (1)= 6.22, p<.05).

The standardised parameter estimates and residual variance for the partially mediated model are presented in Figure 3.

Figure 3: Partially mediated model with standardised parameter estimates and residuals



As can be seen in Figure 3 the dependent variable, safety involvement and proactivity, was predicted by both safety climate (β = .58; p<.01) and role stress (β = -.12; p<.05). Role stress also had a significant and positive relationship with safety climate (β = .41; p<.01). Of the safety climate construct, 16.7% was explained by role stress, while 29.8% of safety involvement and proactivity was explained by safety climate and role stress.

DISCUSSION

The key findings of this research have a range of implications for our understanding of occupational safety and the way in which it is managed. The partially mediated model provided the best fit to the data indicating that while the context specific safety climate factor is an important predictor of safety performance outcomes, so to are more general organisational factors.

Firstly, this research provides further support for the relationship between safety climate and safety performance indicators. Whilst this research is not new, it does reconfirm the importance of attitudes and perceptions on individual safety performance. This research also reconfirms the importance of understanding the 'state' of organisational safety in improving safety performance (Williamson, Feyer, Cairns, & Biancotti, 1997). The safety climate measure provides a useful management tool that has the capacity to diagnose, record and intervene in the weaker components of organisational safety systems (Coyle et al., 1995; Lee, 1998; Reason, 1998). Safety climate also has the capacity to facilitate dialogue and discussion based on the attitudes and perceptions of individuals toward occupational safety (Carroll, 1998) and as such highlights the critical nature of these attitudes and perceptions in commitment oriented safety management (Barling & Hutchinson, 2000; Lee, 1998).

This research also provides support for the relationship between larger organisational factors, such as role stress and safety performance outcomes. The partially mediated model was a better fitting model, indicating that whilst the content specific safety climate construct is an important connection between larger organisational factors and safety performance outcomes, these more general characteristics of the organisation also directly impact safety performance. Role stress has a significant and positive relationship with safety climate, indicating that the less role stress individuals experience the more likely they are to have positive attitudes toward safety. The implications of this relationship for management are that occupational safety cannot be managed effectively as an issue distinct from the remainder of organisational operations. In the same way that issues of production and quality have been integrated into the majority of contemporary organisational operations, so to must safety if organisational safety performance is to be improved. A number of authors have similarly suggested that general management strategies (Barling & Hutchinson, 2000; Barling et al., 2003; Beckmerhagen et al., 2003; Herrero, Saldana, del Campo, & Ritzel, 2002) and those specific to issues of quality, are extremely pertinent to improving organisational safety (Beckmerhagen et al., 2003; Herrero et al., 2002; Krause, 1995; Manzella, 1997; Senecal, 1994). Occupational safety cannot successfully be managed as a separate organisational issue in which responsibility is transferred to a safety professional or officer. Such processes limit the capacity for change and learning to occur in relation to safety, and the issue of occupational safety is not considered the responsibility of all, but of one person or a small group of people (Weinstein, 1996).

Interestingly, there is a negative relationship between role stress and the safety performance variable, safety involvement and proactivity. The implications of this model are such that, when people do not perceive role stress they do not behave proactively and become involved in safety. The balance between production and protection or employee safety within organisations has been extensively documented in safety research (e.g. Berger, 1999; Bohle & Quinlan, 2000; Lawton, 1998; Mullen, 2004; Peterson, 1999; Wagenaar, 1998; Wright, 1986). Perhaps this balance has been skewed in favour of production to the extent that individuals do not perceive that safety can coexist with production. In the context of this research model it appears that unless individuals feel some degree of overload, conflict or ambiguity associated with their work, they do not perceive safety to be important. In order for this problem to be addressed, safety and safe behaviour must become an integral component of the process of production or service provision in a similar manner to the way in which quality has been integrated into the bulk of contemporary organisations (see Beckmerhagen et al., 2003; Herrero et al., 2002; Krause, 1995; see Manzella, 1997; Senecal, 1994; Weinstein, 1996, 1998).

Jobs must be designed in such a way that people have a clear understanding of the balance that exists between production and protection (see Berger, 1999; Mullen, 2004) within their roles and tasks, and in particular that their safety is of the utmost importance. The importance of these factors is based within the theory of social exchange, which is increasingly being incorporated into safety research (Barling & Hutchinson, 2000; Hofmann & Morgeson, 1999). When people perceive that their personal safety and well being is of concern to management, they will reciprocate this commitment by aspiring to perform at the highest standards to benefit the organisation (Hofmann, Morgeson, & Gerras, 2003; Hofmann & Morgeson, 1999).

Limitations

The limitations associated with this research are common to many research projects of this type. The limitations are, first that this model has been tested within only one organisation and as such generalizability is limited (Neuman, 2000). Second, this research is limited by its cross sectional research design (Neuman, 2000) and common method variance (Kline, Sulsky, & Rever-Moriyama, 2000).

CONCLUSION

The broad aim of this research was to test a model of occupational safety in which a larger organisational factor, role stress, predicted safety climate and safety performance. The salience of testing such a model is that it provides a specific context in which the role of managers in ensuring high standards of occupational safety performance is confirmed. Safety specific practices are not the only solution to safety problems and the scope of management strategies commonly used to manage organisational safety must be broadened.

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